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STATE OF NEW YORK

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SEVENTH ANNUAL REPORT

OF THE

Conservation Commission

1917

TRANSMITTED TO THE LEGISLATURE JANUARY 15, 1918

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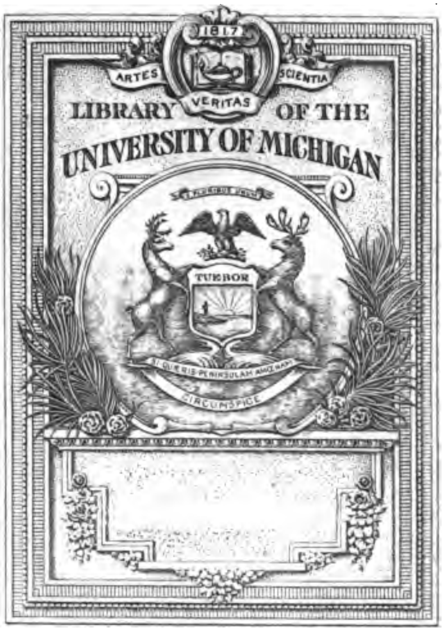
1918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SEVENTH ANNUAL REPORT

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DeCora, H. A.	Forest Ranger	Private, 10th Engrs. (Forest)
Fleig, H. A.	Axeman	Corporal, Co. F., 3d Engrs, U. S. A.
Fogelman, R.	Blister Rust Inspector	Private
Gale, H. F.	Game Protector	Private, Co. L., 326th Inf.
Gavett, R. M.	Blister Rust Inspector	Private, Aviation Corps
Hommel, H. F.	Junior assistant	Private, Co. D., 303d Engrs.
Johnson, H.	Junior Engineer	Lieutenant, 20th Engrs. (Forest)
Katz, A. G.	Blister Rust Inspector	Private
Kolbe, H. G.	Blister Rust Inspector	Private
Mahoney, J. T.	Stenographer	Student, Aviation Corps
Martin, L. C.	Blister Rust Inspector	2d Lieutenant, Aviation Corps
Oughterson, D. B.	Game Protector	Corporal, 302nd Field Batt., Sig. Corps
Parette, W.	Hatchery Laborer	Corporal, 105th Inf.
Porter, F. D.	Assistant Engr.	Lieutenant, E. O R. C.
Raupach, C. V.	Blister Rust Inspector	Private, 20th Engrs. (Forest)
Redband, A. F.	Hatchery Laborer	Private, Troop M, 1st N. Y. Cavalry
Rogers, R. S.	Blister Rust Inspector	Private, 20th Engrs. (Forest)
Ryan, E. G.	Blister Rust Inspector	Private
Sargent, E. H.	Assistant Engr.	Captain, 20th Engrs. (Forest)
Shannon, H. A.	Blister Rust Inspector	Private, 10th Engrs. (Forest)
Suter, R.	Assistant Engr.	Captain, E. O. R. C.
Townsend, E. T.	Game Protector	1st Lieutenant, Co. L., 10th Inf.
Van Zandt, A. L.	Blister Rust Inspector	Private, 10th Engrs., (Forest)
Weber, C. G.	Blister Rust Inspector	Private, 20th Engrs. (Forest)
Wykes, P. B.	Asst. Supt. Game Farm	Private, Medical Corps

STATE OF NEW YORK

CONSERVATION COMMISSION

George D. Pratt	*Commissioner*
Alexander Macdonald	*Deputy Commissioner*
A. S. Houghton	*Secretary*
Marshall McLean	*Deputy Attorney-General and Counsel*
Warwick S. Carpenter	*Confidential Secretary and Editor*

CONTENTS

PAGE

Introduction 9

General Topics 11
  Conservation and the War 11
    Conservation Provides a Food Supply 11
    Forestry and the War 17
    Water Power and the War 18
    Saratoga Springs as a War Sanitarium 19
  Education 20
  College Courses in Conservation 21
  Receipts and Disbursements 22

Division of Fish and Game:
  Receipts 25
  The Fish and Game Laws 26
  Game Protection 26
  Hunting Licenses and Buttons 28
  Licenses for Game Breeding 29
  The Game Farms 29
  Elk 30
  The Heath Hen 30
  Checking Predatory Cats 30
  Game Census 31
    Deer 32
    Waterfowl 34
    Song and Insectivorous Birds 34
    Ruffed Grouse 34
    Woodcock 35
    General Comments on Game Census Work 35
  Jurisdiction Over Tidal Waters 36
  Bureau of Inland Fisheries 37
  Bureau of Marine Fisheries 37
  Bureau of Fish Culture 39
    Financial 40
    Improving the Efficiency of Hatchery Employees 41
    Fish Food 42
    Distribution of Fish 43
    Fish Planting 44
    Stream Survey of Oneida County 45
    The Whitefish 45
    The Carp 47

Division of Fish and Game — *Continued:*

Bureau of Fish Culture — *Continued:*

PAGE
Marine Fish Hatchery Needed 47
Fish Cultural Recommendations Requiring Legislation 48
Utilization of Portions of the Erie Canal for the Production of Food Fishes 48
Protection of Black Bass 50
Regulation of Fish Planting in Public Waters 50
Regulation of Fish Planting in Private Waters 52
State Fish for Private Waters 52
Control Over Lower Hudson River 53
The Private Posting Law 54
Legal Size of White Fish 55
Eliminating Bass and Perch from Trout Waters 56

Division of Lands and Forests:

The Forest Preserve 59
General 59
Area 59
Trespass 60
Occupancy 60
Fire Loss 61
Acquisition 61
Protecting Lake George Islands 61
Reforesting 62
Nurseries 62
State Institutions Receive Trees 63
Reforesting the Forest Preserve 63
Sale of Trees 63
White Pine Blister Rust 63
Forest Fires 64
Fire Conditions and Losses 64
Preventive Measures 65
Causes of Fires 66
Violations of the Fire Law 67
Protective Measures 68
Steel Towers Erected in 1917 69
Forest Fire Losses, 1917, by Causes 70
Forest Fire Losses, 1917, by Counties 71
Weeks Law 72
Salaries of Rangers 72
Non-Fire Towns 73
Forest Products 73
White Pine Blister Rust 73
Summary of Results, 1916 74
Plan of Work, 1917 74
Scouting 76
Control 77
Eradication 78

Division of Lands and Forests — *Continued:*

Water Pine Blister Rust — *Continued:*

PAGE

- Co-operation ... 78
- Future Control Methods ... 78

War Work ... 79

Lands Purchased ... 79

The Cuba Reservation ... 80

The St. Lawrence Reservation ... 80

The John Brown Farm ... 80

Division of Waters:

Water Power Development ... 83

Water Power and Storage Surveys ... 83
- Black River ... 83
- Grass River ... 84
- Upper Hudson and Schroon Watersheds ... 84

Power Studies ... 85
- St. Regis River ... 85
- Hudson River ... 85
- Ausable River ... 85

Upper Hudson River Regulation ... 85

Drainage ... 86

Canaseraga Creek Improvement ... 86

Inspection and Supervision of Hydraulic Structures ... 87

Water Supply and Sewage ... 88

Engineering Assistance ... 88
- St. Lawrence Reservation ... 88
- Fish Hatchery at Dunkirk ... 89

Amendments to Conservation Law Recommended ... 89
- Supervision of Hydraulic Structures ... 89
- Drainage Law ... 89
- Advertising ... 90

Division of Saratoga Springs:

Revenue Producing Departments Make a Profit ... 93

Increases for the Year ... 93

Comparison of Receipts for Calendar Years 1916 and 1917 ... 94

Bottling Difficulties Overcome ... 95

Parks and Drives ... 97

Buildings ... 98

Wells and Springs ... 99

Storage System ... 100

Bottling Plants ... 100

Ferndell Plant ... 100

Experimental Well on the Smith Property ... 101

Drink Hall and Bath House ... 102

Statement of Operating Expenses and Profits ... 103

Summary of Legislative Recommendations ... 111

Conservation Bureau, Attorney General's Office ... 117

Financial Statement ... 125

ILLUSTRATIONS

FACING PAGE
Spruce forest purchased with funds provided by the bond issue........ 30
Hardwood forest purchased with funds provided by the bond issue..... 31
The modern steel tower on Adams Mountain, and the wooden tower that it replaced.. 62
The glass enclosed cabins of the steel towers greatly increase the efficiency of the observers.. 63
Erosion is rapidly destroying the most beautiful of the Lake George Islands 94
Simple rock retaining walls provide effective and permanent protection. 94
The State's abandoned canals offer unlimited opportunity for the propagation of food fishes... 95
The Springs on the State Reservation at Saratoga are flowing with all their original vigor.. 126
Power running to waste on the Genesee river........................ 127
Equalization of floods and low water on the Genesee river will provide power equal to 2,000,000 tons of coal each year.................... 127

SEVENTH ANNUAL REPORT

OF THE

CONSERVATION COMMISSION

To the Legislature:

Pursuant to statute, the Conservation Commission begs to submit, for the consideration of your honorable body, a report of its work for the past year, as well as certain recommendations which it trusts will meet with your approval.

In the text of this report the discussion of the work of the Commission has been carried down to the end of the calendar year, December 31, 1917. Financial and other tables which are directly related to the fiscal year are, however, carried only to the end of the fiscal year, June 30, 1917. This method of preparing the report has been adopted because of the fact that the Legislature each year must consider many questions of conservation which require knowledge of the department's doings down to date, and not merely information that is already six month's old.

Under the statute the work of the Commission is grouped into four divisions. This report accordingly considers each division in turn, preceding them, however, with a discussion of general topics. This is followed by the report of the Conservation Bureau of the Attorney-General's office and the Annual Financial Statement of the Commission. The arrangement is as follows:

I. General Topics.
II. Division of Fish and Game.
III. Division of Lands and Forests.
IV. Division of Waters.
V. Division of State Reservation at Saratoga Springs.
VI. Summary of Legislative Recommendations.
VII. Conservation Bureau, Attorney-General's Office.
VIII. Financial Statement of the Conservation Commission.

GENERAL TOPICS

GENERAL TOPICS

CONSERVATION AND THE WAR

The declaration of war in April, 1917, brought to a clearer focus than ever before the vital relation of conservation to national welfare. It turned the attention of conservationists everywhere to a reappraisal of the value of effective conservation as a national asset. Everywhere throughout the country state conservation commissions, under whatever names they are known, and the national conservation departments, chief among which are the Forest Service, the Bureau of Fisheries and the Biological Survey, made plans to meet the new conditions imposed by the war and to make their machinery effective to the greatest possible extent in utilizing the natural resources that come under their jurisdiction.

It very early developed that in addition to effecting the utilization of natural resources as fully as regard for the future will permit, the conservation forces of the country had to face another war-time problem in the shape of ill-considered, but none the less clamorous, demands that the safeguards of conservation, which have been so laboriously built up during the last few years, be let down. It is of the utmost importance in a time of such tremendous national stress that every proposal of this sort be most carefully scrutinized and that no steps be taken which will react disastrously upon all that conservation has accomplished.

Conservation Provides a Food Supply. The war has brought a fuller appreciation than ever before of the food value of the country's game supply. When deer are used as an illustration of this statement, its truth is clear enough. Deer are large animals, ranking as big game, and dressed carcasses will yield, on an average, more than one hundred pounds of excellent meat. Moreover, deer are prolific, and under proper protection will hold their own, so that they may be taken each year in considerable numbers. One therefore needs little imagination to clearly visualize the importance of the food resource that New York State has in its white-tailed deer. The law requires no report from hunters, as in some other states, of the deer that they shoot, and accordingly the Commission endeavored, during the last deer season, to get an approximate idea of the number of deer killed, by requiring game protectors to make estimates for their territory, based upon their own observations and inquiries. For the open season of 1917 they reported in all 5,543 deer killed. Other investigations, such as the number of Adirondack deer hides sent to the State's largest tanneries during the season, ascertained to be in excess of 6,000, lead to the conclusion that the reports of the game protectors are far too low. This is due to the large territory that each man must cover, and to the fact that a great many deer are killed which it is impossible for a single man to trace. The Commission feels, as a result of all of the investigations that it has made on that subject, that the total number of deer killed in the State each year will run between 8,000 and 10,000. On the basis of 100 pounds of meat to each deer, this means between 800,000 and 1,000,000 pounds, or between 400 and 500 tons, which releases an equivalent amount of other food.

It is far more difficult to make an appraisal of the food resources in the smaller game. This has been attempted by some states, but the Conservation Commission does not feel that it is possible, with any reasonable degree of accuracy, to state in figures the number of rabbits, ducks, pheasants, and other small game that are used as food in the course of a year. This does not in any way mean, however, that this food resource is not of tremendous importance. In fact, if it were very much less important, and if small game was not taken so universally everywhere, it would be far easier to make an estimate of its amount. This small game is found in all parts of the State, and it is taken by sportsmen in sufficient abundance to induce approximately 200,000 of them to take out hunting licenses each year and to hunt consistently in the proper seasons. The food value of the game that they take in the aggregate, quite aside from the healthful and aesthetic value of the recreation, is surely a very large factor in the State's food economy, and one which it would be the utmost folly to impair in any degree.

The fish of the State are of even more importance than the game as a food supply. New York State is abundantly supplied with both large and small streams and lakes, and nearly all of these are fish producers to at least some degree, while some of them are wonderful breeding waters. This makes it possible for the State to permit commercial taking of fish to a considerable extent. Fishing is a more universal recreation than hunting, and in many cases is constantly practiced, simply because it yields an important supply of food for the table. Fish are more easily propagated than game, and stocking the waters with fish yields results with greater rapidity and certainty than stocking game covers. It must not be lost sight of that a pound of even the gamest of game fish is quite as valuable as a substitute for a pound of meat as is a pound of the coarser, so-called "food fishes." As a matter of fact all edible fishes are food fishes, and in appraising the State's fish resources we must take full account of the large number of trout, bass, and other game fish. For all of these reasons the fish food resources outweigh the game.

Since the declaration of war the Commission has permitted increased netting of fish in certain waters, and has endeavored to make the fish resources as available as possible without impairing future supply. Objection to this course has come from many sportsmen. The Commission feels, however, that, if fish can be netted commercially in certain waters, without undue depletion, their food value is greater in the present emergency than if used for angling only. When coarser fishes, such as carp and suckers, are netted, angling is actually improved.

One of the most important results of conservation is that following upon the protection of song and insectivorous birds, which are so important for agriculture. Since this protection became effective, independent reports from all quarters have proved conclusively that the birds, without which agriculture would be impossible, have increased greatly. Without attempting to repeat here statistics upon the number of insects annually consumed by birds, and the crops that insects would destroy were it not for our bird allies, it is enough now, in this discussion of the relation of conservation to the war, to point out that this one benefit from effective conservation is undoubtedly enough to justify all of the effort that is expended.

Strange as it may seem, the first effect of the war upon conservation was to bring forth suggestions which would impair the work of years. These suggestions originated in several independent quarters. Their common tendency, however, was to let down the bars of conservation and to run absolutely counter to the lessons which conservation has taught us through many hard years of constructive work. The Commission has given due attention to all of these suggestions, and believes now, as it did when they were first advanced, that if the principles and methods of conservation have been correct in the past, this is the time of all others when they should be most carefully observed.

It must not be forgotten that it has been very difficult to stem the tide of waste, and that in some respects this has even yet not been accomplished. The laws upon the statute books permit every drain upon our valuable wild life resources that they are capable of standing, and with some species of both birds and fish it is apparent that still more stringent measures must be enacted if we are to save those species. Accordingly to let the bars down would undo all of the work that has been done, and would immediately be felt in a loss of the annual food that these species now provide. The argument may be thoroughly summed up in the familiar phrase that we must not " kill the goose that lays the golden eggs."

This does not mean that the war has not taught us already a great many things that must be done to increase our wild life resources. It has made it increasingly clear that constructive conservation, the kind of conservation that creates more resources, while utilizing them as fully as possible, must be given a powerful impetus. The work of fish propagation must be intensified. The lakes and streams of the State are by no means producing their maximum amount of fish food. Measures for accomplishing this will be found in the report of the Bureau of Fish Culture. In a similar manner, more game birds and animals can be provided under more intensive systems of propagation and protection. These measures, which will be discussed further in the following pages, are constructive, while letting down the bars of conservation would be destructive and ruinous.

It is a just criticism of the haphazard methods of wild life conservation which have characterized preceding generations that the present crisis finds both the State and country far from its ultimate goal in this work. The war should drive home to every one the vital necessity of conservation and the importance of increasing effort all along the line. We must produce more of those natural resources which cost so little in money, but so much in care and foresight, in order that we may have them for food in greater abundance.

Forestry and the War. The war has placed an added emphasis upon the importance of correct forestry practices. Enormous amounts of timber of all sorts are needed for war purposes, and among the warring European nations the main reliance for such wood supplies has been upon forests that have for many generations been administered in accordance with the principles of scientific forestry. In many cases the forests that have been drawn upon have been planted forests. So great is the need for this timber that American lumbermen and foresters are now at work in the forests of France getting out timber for the Allied armies. Upon the conclusion of the war the forestry efforts must be intensified in all of the regions that have been fought over, on account of the practically complete destruction by shell fire of all trees in the war zone. Americans are familiar with the appearance of this destruction, from many published photographs showing nothing remaining but stumps. It is significant that such devastation is almost identical in its appearance with the devastation wrought in our own country by forest fires.

This country has not only been wasteful of its timber resources, but it has not yet practiced the constructive forestry that has characterized France and Germany. Forest fires have been permitted to cause a devastation over wide areas similar to the war devastation that now arouses so much resentment. While it is true that in New York State our forestry policies are already thoroughly developed, it is nevertheless true that they are not yet sufficiently executed. One of the lessons of the war should be that we must immediately intensify our work in this direction. This is particularly true of reforestation. It is important that the State reforest more of its own land, and equally important that the private land owner be given more encouragement than ever before to bring waste areas again under tree growth. This can be done by assistance from the Conservation Commission, and also by a revision of the laws regarding the taxation of forest lands. A system that appeals most to those who have given careful study to the problem is that of exempting the trees upon planted land from taxation until they have attained a proper age, and then to impose a cutting tax in proportion to the yield.

The coal shortage has brought forceably home the great importance of wood for fuel. A conference of representatives of the State Grange, the Farm Bureaus, the Colleges of Forestry at Cornell and Syracuse Universities, the Empire State Forest Products Association, and the Conservation Commission was called by Governor Whitman on December 26th for the purpose of instituting a campaign to obtain a more general substitution of wood for coal. Because of the fact that the Conservation Commissioner was appointed a member of the Conservation Committee for New York State of the United States Fuel Administration, it was immediately possible to make comprehensive plans, and to begin the work at once in all parts of the State with the most whole-hearted cooperation from all concerned.

Soon after the declaration of war, the recruiting of a forestry regiment, known as the Tenth Engineers, was authorized. This work was placed in charge of the United States Forest Service, and received the cooperation of the Forestry Departments of States throughout the entire country. The Superintendent of State Forests has acted as recruiting officer for this regiment and for the second forestry regiment, known as the Twentieth Engineers.

Water Power and the War. While the country has labored under the tremendous handicap of a fuel shortage, enough water power has been running to waste in the State of New York to make up a very large proportion of the deficiency within our own borders. Factories have been shut down for lack of coal, when they might have been run by hydro-electric power. Buildings have gone unheated that might have been heated with coal released through a proper development of the State's latent water power. Everywhere throughout the State lightless nights have been decreed, that would have been unnecessary were we thoroughly utilizing the white coal of the waterfalls.

For this situation the State can offer few excuses. The need has been known for a long time without effective action being taken.

Realizing the importance of this subject at the present time, Governor Whitman appointed a committee, composed of the Attorney-General, the State Engineer, the Superintendent of Public Works, and the Conservation Commissioner, to study the subject and to recommend to him a comprehensive policy for the development of the State's latent water power. The Committee's recommendations have already been transmitted to the legislature in the Governor's annual message. They are as follows:

"Your committee has decided upon submitting to you four suggestions, the first two of which, while concrete in themselves, necessarily have a direct bearing upon the third, and in the opinion of your committee should be effected in order to permit of a proper and certain accomplishment of the third suggestion.

"1. To amend the Constitution so as to take from the Legislature the power to grant away, by private bills, the water powers of the State.

"2. To repeal Article 7-a of the Conservation Law, which provides for river regulation by storage reservoirs.

"3. The immediate passage of appropriate legislation to enable the State to develop the undeveloped water powers of the State through a commission to be appointed by the Governor and to market the power thus developed under the direction of such commission.

"4. The immediate passage of appropriate legislation authorizing the Superintendent of Public Works, with the approval of the Canal Board, to dispose for proper returns by lease, of surplus water power created as a result of the construction of the Barge Canals."

Steps should be taken immediately to put these recommendations into effect. In no other way can the State of New York exert such influence for good and such tremendous help to the nation, as by taking the lead in water power development, which goes to the very heart of national preparedness.

Saratoga Springs as a War Sanitarium. In the State Reservation at Saratoga Springs, New York has a natural asset of the greatest value for the treatment of men incapacitated by the war.

The hydro-therapeutic treatments given at the State Bath Houses are particularly valuable following many operations. They are equally useful in the treatment of many disorders induced by the war, among which may be mentioned rheumatism, affections of the joints, stomach and metabolic disorders, and both organic and functional nervous diseases. There will be many cases of cardiac, renal or circulatory disturbances which must be treated under army medical supervision. These cases should be given, in addition to hydro-therapeutic treatment, the advantage of graded hill climbing exercises, for which the parks of the State Reservation are designed, and of massage and electrotherapy.

The State Reservation offers unequaled advantages for the treatment of all of these disorders, and can supply besides, in inexhaustible quantity, its tonic and medicinal drinking waters.

All of these facts have been placed before the Surgeon-General of the United States Army, with an offer from the Commission to cooperate to the fullest possible extent in making the therapeutic resources of the State Reservation at Saratoga Springs available for the benefit of injured and incapacitated soldiers.

EDUCATION

Throughout the year the Commission has given consistent attention to its educational work. A large number of lectures have been delivered in all parts of the State, and these have been illustrated with both lantern slides and motion pictures. For lecture purposes, and also for the purpose of illustrating articles and reports upon the work of the Commission, additional photographs and motion pictures have been taken from time to time. The collection now brought together is sufficiently comprehensive to constitute an important factor in visual instruction in conservation. While lantern slides have been loaned frequently to schools and to outside lecturers, the motion picture films have been loaned with much greater frequency, several of them being out for this purpose almost continuously during the winter months.

The audiences which have been reached during the year by lecturers include forest, fish and game associations, rod and gun clubs, granges, churches and church organizations, Y. M. C. A.'s, colleges, public schools, civic and commercial associations, and general public gatherings. The lectures have been given by many different men in the Commission, each man speaking, as far as possible, upon the subjects that come within his own particular sphere.

A large amount of material has been written for the press and for magazines and class publications particularly interested in conservation, much of this material being illustrated with photographs.

The Commission has also issued its usual number of bulletins of an educational nature, and has brought out a monthly magazine called *The Conservationist.*

COLLEGE COURSES IN CONSERVATION

The Legislature last year made an appropriation of $15,000 for the establishment of an experimental game farm at Cornell University. It was the purpose of this appropriation to establish a game farm to be operated in connection with courses on practical game farming to be offered at Cornell University as a part of the general work of the Department of Poultry Husbandry. The farm is to be operated in cooperation with the Conservation Commission. The appropriation of this money, however, has had a far wider effect, and one which the Commission believes will ultimately be of incalculable benefit to the entire cause of conservation. It focussed attention upon the need for men of special training in various lines of conservation work, which led to the formulation of plans by Cornell University to give a special course in conservation, which will fit men to take up practically any phase of this work. This special course will be in addition to the short course in game breeding, which it was originally intended to conduct in connection with the experimental game farm. It will now shortly be possible not only for young men to fit themselves to become superintendents of game preserves, but also, of more importance for both State and national governments, to obtain the services of men who have had a thorough training in the natural sciences that underlie all effective conservation, and who have been given the educational foundation and breadth of view so essential for broad, constructive work in this field.

RECEIPTS AND DISBURSEMENTS

It will be noted in the financial statement of the Commission, which appears at the end of this report, that the receipts for the fiscal year, exclusive of those for the Division of Saratoga Springs, were $402,616.11. For the fiscal year ending on June 30, 1916, they were $347,979.06. The latter year, however, included only nine months, and accordingly gives hardly a fair comparison. The fiscal year ending September 30, 1915, which was a full twelve month period, showed receipts of $321,568.77, or $81,047.34 less than those for the twelve months covered in the present report.

Disbursements for the year ending June 30, 1917, were $752,485.68. When these disbursements are compared with those of the fiscal year of twelve months, ending on September 30, 1915, which were $702,124.66, it is seen the increase is less than the increase in receipts during the same period, the increase in disbursements being $50,361.02, while the increase in receipts, as stated above, was $81,047.34.

More detailed analyses of receipts and disbursements show that receipts are increasing more rapidly than expenditures, as the work of the Department is better organized and more efficiently conducted from year to year. When to these receipts are added the fish hatchery and game farm products, the values of which were discussed in this connection in the last annual report, it is clear that the Conservation Commission returns to the people of the State each year in cash or its equivalent more than the entire amount that is appropriated.

DIVISION OF FISH AND GAME

DIVISION OF FISH AND GAME

Llewellyn Legge	*Chief Protector*
John T. McCormick	*Deputy Chief Protector*
John W. Titcomb	*Fish Culturist*
Mannister C. Worts	*Superintendent of Inland Fisheries*
Emmett B. Hawkins	*Supervisor, Bureau of Marine Fisheries*

DIVISION OF FISH AND GAME

RECEIPTS

During the fiscal year ending June 30, 1917, a new high record was established in the receipts from resident and non-resident hunting and trapping licenses, the total amount paid to the State being $230,683.90. This was $14,240.22 over the receipts from the same source for the preceding year.

The total number of actions successfully prosecuted was 2,779, which included an increase of 495 actions more than the record of the preceding year. The receipts from fines and penalties during the fiscal year, totaled $70,614.35, which was an increase of $21,110.23 over the preceding year.

The total receipts of the Department are as follows:

Hunting and trapping licenses	$230,683	90
Fines and penalties	70,614	35
Rental of shell fish grounds	31,860	74
Net licenses	19,907	23
Breeder's licenses	1,019	00
Importation of foreign game tags	5,209	30
Tagging trout	2,380	25
Licenses for importation and possession of game	974	00
Domesticated game tags	30	00
Licenses for hunting dogs	1,779	00
Sale of fish	676	51
Sale of skins confiscated	314	61
Sale of badges	45	00
Miscellaneous receipts	117	50
Total	$365,611	39

THE FISH AND GAME LAWS

Few changes are needed in the laws affecting fish and game. The New York code of fish and game laws has had many years of practical test and has been found to work very satisfactorily from the standpoint of all concerned. The Commission accordingly believes that the fewer changes that are made in these laws each year, the better. Frequent changes result in great uncertainty in the minds of sportsmen and increase difficulties of law enforcement. The history of such legislation teaches us that whereas the conditions of wild life ordinarily do not change rapidly, the laws affecting this wild life have been subject to the most erratic changes, in accordance with every new idea that has developed. This lack of stability in legislation, which has itself been due to lack of adequate information regarding wild life, has frequently reacted most adversely on the work of conservation. The Commission feels that it is important to maintain as much stability as possible in the fish and game laws, making only such changes each year as are clearly seen to be necessary. Certain changes of this nature will be recommended in the following pages.

GAME PROTECTION

The continued efficiency of the game protective force is indicated by the fact that the total number of cases successfully prosecuted during the year was 2779, against a total of 2284 for the preceding year. This is a gain of 495. Receipts from fines and penalties were $70,614.35 against $49,504.12 for the preceding year. The receipts this year included a single penalty of $15,000, which was received in settlement of a case of illegal trapping of wild ducks on Long Island. After deducting this large single fine, the year's record of receipts is still $6,110.23 ahead of the best previous year.

The Commission feels that the increased efficiency in game protection is due to two causes, one of them being a greater public cooperation than has ever before been experienced. The public have gradually come to realize more fully than ever before that the State's wild life resources are public property, which it is the duty of every citizen to protect for the common good. Reports from the game protectors regarding assistance that they receive in the conduct of their work indicate a very healthy growth of this idea. While it is to be regretted that certain sections of the State are still blind to their own best interests, and apparently still feel that a game protector is not entitled to the public cooperation that other police officers enjoy, it is none the less true that this condition exists only in certain localities and is not general throughout the State. Another factor of great influence in increasing the efficiency of game protectors is the uniform which they have been required to wear for about a year and a half. The wearing of the uniforms has had a beneficial effect not only on the protectors themselves but also upon the public generally. The *esprit de corps* of the men has increased, their personal appearance has been improved, and the effect upon their general efficiency has been that which always results from a similar cause in any police or military organization. Upon the part of the public and the officials with whom the protectors have to deal, the effect of the uniforms has been equally apparent. The number of cases obtained and the recoveries are themselves sufficient evidence of the truth of these statements. As long as violations of the law occur, it must be the aim of the Commission to detect more and more cases, and to make it increasingly hazardous year after year for men to violate the law.

It must not be lost sight of, however, that a protector's efficiency is by no means determined simply by the number of cases that he obtains. As the business of game protection has developed, it has become apparent that the protector has many other duties than the mere apprehension of violators. This has led to a revision of the method of rating protectors. Whereas originally the protector's rating was determined almost entirely by the number of cases secured, under the system adopted this year, the number of cases counts only two points in a total of ten. The other factors making up the rating are number of days worked, one point, recoveries, one point, and general efficiency six points. It is possible under this system for a protector who has comparatively few violations in his territory to obtain a good rating, whereas under the old system this would have been impossible.

Under the system of rating now in force, protectors are divided into three grades. Those that make the first grade in any year are given an annual increase of $100 in salary. In the practical working out of this plan a comparatively small number of men have made the first grade. It is felt that a greater incentive will be offered to all of the men to improve their work if this system is changed to provide that all men making the first grade shall receive $100 increase for the year and that those in the second grade shall receive $50 increase. In addition to furnishing such an incentive for better work, the plan will result in moderate increases in salary which are well justified by the greatly increased cost of living.

HUNTING LICENSES AND BUTTONS

Mention has already been made of the fact that receipts from hunting and trapping licenses during the year were $14,240.22 more than the receipts from the same source for the preceding year. These are the largest receipts from this source in the history of the Commission and are attributed to the fact that hunters have been required to wear a hunting license button. From all of the information that the Commission has been able to obtain, it appears that the war has resulted in a decrease in hunting license fees in every other State where licenses are required, New York being the only State that has shown an increase. The only cause assignable is the button, which was worn during the last fiscal year for the first time. Violations of the hunting license law have always been more numerous than any other violations, because of the fact that heretofore, if the hunter was not met afield by a game protector, no one would question him regarding his license. Evasions of the law were thus easy and very numerous. Under the present system, if a hunter is afield without a button, it is at once apparent to every one whom he meets that he is violating the law. This has induced men who heretofore have practiced such violation to take out licenses. The color and character of the button is changed from year to year, so that it will be impossible for a hunter to use in one year a license button for the preceding year. The buttons for 1918 will be somewhat smaller and less conspicuous than those for 1917, and will be more substantially made, thus meeting some criticism against them. In the experience of the protectors, there is no disposition to criticize the wearing of a button among sportsmen who understand its purpose.

LICENSES FOR GAME BREEDING

The war has caused a large increase in the number of persons who are engaged in the commercial production of wild game under license from the Commission, the number being 175 this year, against 145 a year ago. On account of the cutting off of shipments from Europe, chiefly of grouse, pheasants and venison, the demand for domestically reared game has greatly exceeded the supply and has made it possible for private game breeders to command exceedingly attractive prices. The field is large, open and profitable, and without doubt will continue to be developed. While the effect of the war is temporarily to enlarge the profits from this work, the Commission feels that the greater and more permanent benefit will be found in the fact that more people are becoming interested in game breeding, and will continue to practice it after conditions have returned to normal.

THE GAME FARMS

The year 1917 was a very successful one at the three State game farms located at Brownsville, Jefferson county, Sherburne, Chenango county, and Middle Island, in Suffolk county. The total number of live birds shipped to applicants was 9,141, while approximately 65,049 eggs were shipped for hatching by the applicant under setting hens.

The applications for eggs and birds showed that 60 per cent of the applicants already have pheasants on their premises. This is very accurate and valuable information and shows that the State's efforts to stock the covers with pheasants is being productive of most excellent results.

Experiments in the hatching of eggs in incubators and rearing the pheasant chicks in brooders were carried on during the year at the Jefferson County Farm with very gratifying results. It is believed that if this method can be more fully perfected, and if sufficient supplies of insect food can be found for the chicks, the output of the game farms can be very materially increased.

ELK

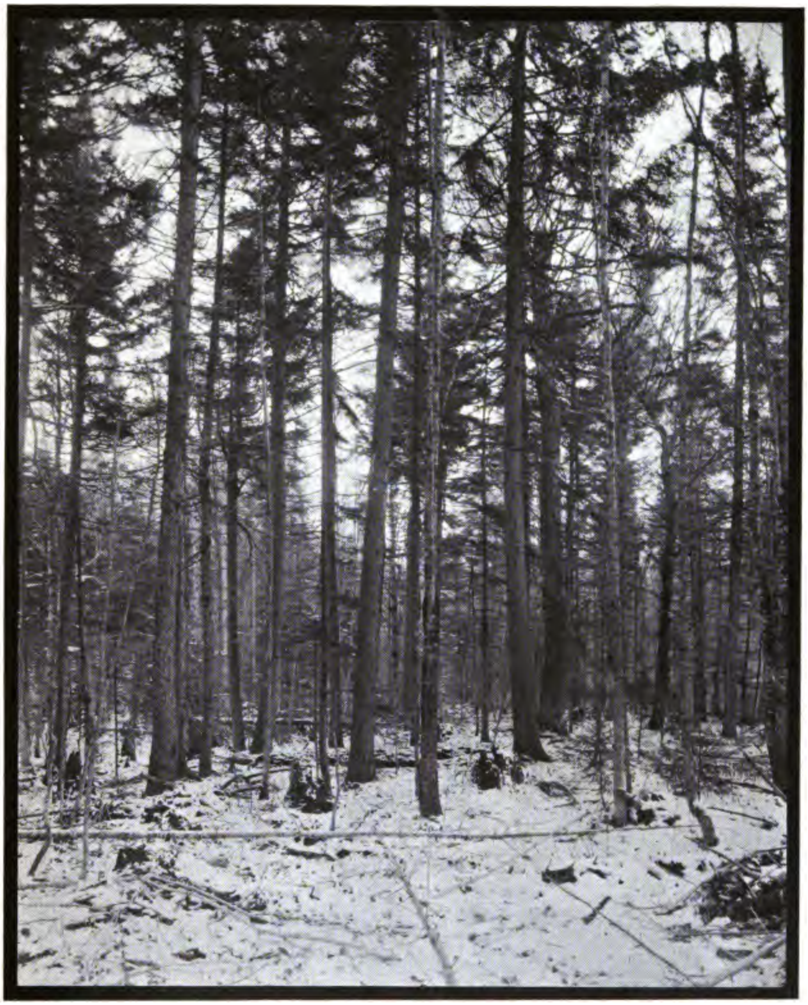
Since the liberation of a car load of elk in the Adirondacks in April, 1916, through cooperation with the Benevolent and Protective Order of Elks, these animals have been given special attention by the game protectors, and the reports all agree in stating that they have wintered satisfactorily and are breeding normally. Unlike the elk liberated in 1901, which came from a private preserve, the animals recently liberated are much wilder and are keeping much more in the deep woods. It is believed that, when financial conditions make it possible, the liberation of another car load will establish the elk in the Adirondacks upon a secure foundation.

THE HEATH HEN

A year ago the Commission reported that through the courtesy of the Commissioners of Fisheries and Game of the State of Massachusetts, a number of heath hens had been obtained from the Island of Martha's Vineyard, and had been liberated upon the state game farm on Long Island. It is very disappointing to be obliged to state this year that none of these birds have survived, all of them having died from some form of intestinal disease. It is equally discouraging to have to announce that a severe mortality has occurred on Martha's Vineyard and that very few of the birds are left. The heath hens are thus nearer than ever to absolute extinction. The State of Massachusetts is using every effort to increase the Martha's Vineyard flock, but it is not possible at this time to state what success may be expected from their efforts. The experience with the heath hen is another illustration of a fact, often observed with other species of birds and game, that when their numbers have been reduced sufficiently, it seems almost impossible to bring them back. It teaches that conservationists must be constantly on the alert to keep the remaining supply of wild life from falling below that danger point.

CHECKING PREDATORY CATS

The Commission has before called the attention of the Legislature to the great damage inflicted upon many forms of wild life by uncontrolled numbers of predatory cats. Since the filing of



Spruce forest purchased with funds provided by the bond issue.

Hardwood forest purchased with funds provided by the bond issue.

the last annual report, evidence of this destructiveness has continued to accumulate. In fact, it is universally admitted by those who have made a study of this subject that uncontrolled cats are one of the greatest menaces with which bird life has to contend. The Commission accordingly recommends that the Legislature empower it to take effective steps to limit the number of unnecessary cats.

This suggestion is in no way directed at valuable house cats or cats that are necessary about barns and other farm property. If a license costing only a nominal sum is required for all such valuable cats, it will impose no hardship upon agricultural communities. At the same time it will make it possible to systematically destroy the unlicensed cats, many of which claim no home and live entirely on the country. The resulting benefit to bird life, and thus to agriculture and to sport in general, will be unquestionable.

GAME CENSUS

The work of the game census has been continued throughout the year and game protectors have been required, as before, to make weekly reports to the Commission, through their Division Chiefs, of the game actually seen by them in the course of their patrol work. Special reports upon game conditions have also been required from time to time. The quality of these reports has increased noticeably as the work has been continued, thus proving that one of the important results of such reports is that it makes the protectors themselves more observant and gives them more exact information regarding game conditions in the territory which they cover. It is of course fundamental that no man can be an efficient game protector unless he has first-hand knowledge of the game which he is required to protect.

It is impossible to state in figures the amount of game in the State, except with such large animals as deer. The game census is accordingly not conducted with an idea of making a numerical estimate of any game except the deer, the work being directed for the purpose of obtaining as much information as possible regarding game conditions, and the general abundance of different species in different sections. Some of the more important results of this work are briefly covered in the following paragraphs.

Deer. From the beginning of the game census in August, 1915, to October 1, 1917, the game protectors have reported 14,369 observations of deer, stating on their report cards whether the sex was undetermined, or whether the deer observed were bucks, does accompanied by fawns, does unaccompanied by fawns, or fawns. The very large number of observations made, covering every season of the year, makes it possible, in accordance with established principles of statistical interpretation, to reach definite conclusions regarding the working of the buck law. It may be stated briefly here that in the 14,369 observations upon deer, it was not possible in 7,551 cases to determine the sex, due to the fact that the deer were too far off, or that the observation was made in the winter or early spring before the horns of the bucks had appeared. In 5,743 cases, however, the sex was positively determined, the summary of the observations showing that 1,989 bucks were seen, and 3,743 does, or a proportion of approximately two does to one buck. Inasmuch as a proportion of four does to one buck has been found to be thoroughly safe, it is thus apparent that the buck law is accomplishing the purpose for which it was designed. In view of the rarity with which fawns are seen in the woods, and because of the well known fact that does secrete their fawns and often travel about unaccompanied by them, it is interesting to find that of the total number of 3,754 does observed, 718 were accompanied by fawns. The total number of fawns seen was 1,075. These facts alone indicate that the deer are breeding normally.

In interpreting the statistics of the deer census, it is recognized that the same deer will sometimes be seen more than once. The reports of "deer seen" accordingly mean, in exact language, "observations of deer." The very large number of observations, made continuously over a long period of time, nullify the effect of any duplicated observations upon the same animals.

In the deer hunting season of 1916, and again in 1917, the protectors were required to report the estimated number of hunters in their districts during each of the seasons, and the estimated number of deer that they shot. In 1917 they obtained the cooperation of hotels, boarding houses and guides in compiling their reports and before transmitting them to the Albany office discussed their conclusions in their monthly Division meetings. The reports, even though they are estimates, are accordingly based upon careful observations and deliberate judgment. It is much easier to obtain information regarding the number of hunters in a district than the number of deer shot, and the reports of the number of hunters are for that reason considered more accurate. The total number of deer hunters reported in the state for the season of 1917 was 37,067.

The protectors reported that these 37,067 hunters shot 5,543 deer. Reports from tanneries, however, show 5,886 Adirondack deer hides purchased since October 1, 1917, with a great many still coming in from local fur buyers. On the basis of this evidence, the Commission believes it justifiable to assume that the annual deer kill of the State is between 8,000 and 10,000.

For two successive years the protectors have made examinations of their districts in the late winter, when the snow was deepest and the deer were yarded, for the purpose of estimating the number of deer in each district. The results of the second examination were thus based upon the experience gained in making the first, as well as upon the knowledge acquired while making weekly reports of all deer seen during more than a year and a half. The conclusions were discussed in the monthly Division meetings, and checked by the Division Chiefs before transmittal to the office. The Commission's estimate of the total deer population of the State is thus based upon a long examination and careful weighing of the reports. It is estimated that there are approximately 50,000 deer in the State.

The large number of hunters, who find every part of the woods more easily accessible than ever before, on account of roads and automobiles, make it apparent that the condition of the State's deer herds must be watched with great care. The present deer law is working very satisfactorily, but the Commission believes that it would be improved by opening the season on October 15, instead of October 1, thus cutting out two weeks when the leaves are thick on the trees and it is very difficult to distinguish a buck from a doe. It is imperative that every safeguard possible be thrown about the does, in order to maintain a continuous deer supply. It is also advisable to reduce the bag limit, allowing one buck to a hunter, instead of two as at present. Hunters should also be required to report deer killed by them, as in no other way can absolutely accurate information regarding the annual kill be obtained. These subjects were discussed more fully in the last annual report.

Waterfowl. Reports on waterfowl, which have been very comcomplete during the last year, prove conclusively that these birds, which were formerly hunted throughout their entire migratory range, but which are now protected by the Federal Migratory Bird Law, are increasing at a very rapid rate. Many of the birds nest in the far north, but reports of game protectors, in localities where the birds would naturally breed, show a very marked increase in the extent to which waterfowl are now breeding within the State of New York. The Commission's statistics on waterfowl constitute an important addition to the mass of evidence that has been collected in all parts of the United States on the practical effect of the Federal Migratory Bird Law.

Song and Insectivorous Birds. The game census reports show the same increase in song and insectivorous birds, and in fact in practically all migratory species, as in the waterfowl. This increase has been so marked with certain species, such as meadow larks, bobolinks and robins, that many protectors have voluntarily written special reports about it. It is of the utmost significance to farmers, since these birds are tremendous destroyers of noxious insects and weed seeds. Definite information of this sort is invaluable as a bulwark against any attempt to impair the operation of the laws protecting these birds.

Ruffed Grouse. The alarming decrease in the number of ruffed grouse in all parts of the State caused the Commission to make a special investigation of this subject. Special detailed reports on the grouse situation were required from every game protector and forest ranger, and in order to insure uniformity in these reports and facilitate ease of tabulation and interpretation, a printed questionaire was provided. In addition the questionaire was sent to every fish and game association in the State with a request that the association supply the information desired. The great interest of sportsmen in this game bird was overwhelmingly indicated by the character of the replies. To these reports there were then added summaries of all of the weekly game census reports on grouse sent in by the game protectors since August, 1915, and also tables of statistics on rainfall during the last three nesting seasons. All of this data was turned over to the American Game Protective Association for use in connection with reports from all parts of the United States, in an effort to bring about comprehensive measures to save the grouse in every State where it is now threatened with extinction.

The causes resulting in the decrease of grouse are not easy of analysis, and it is difficult to make a proper appraisal of the value to be attached to each cause. Without attempting to go into a complete discussion in this short report, it may be stated here that they include cold, wet nesting seasons during the last three years, an increase in predatory animals and birds, and greatly increased hunting during the open season. The increased hunting is due to the fact that the automobile and improved roads have made it possible for hunters to go much farther afield than formerly, and to hunt over far more covers in a single day than was ever before possible. Other causes have undoubtedly also contributed to the decrease.

Closing the season for a period of years, that the remaining birds may have a chance to increase, was overwhelmingly favored by both sportsmen's associations and the Commission's field force, the larger number considering two years a proper time.

Woodcock. Data on woodcock very similar to that collected on the grouse, though not so complete, has been collected. It is much more difficult of interpretation, because of the fact that the woodcock is not thoroughly understood by men who have not hunted it extensively or made a careful study of its habits. The woodcock reports are accordingly somewhat conflicting and a proper interpretation of them requires that the qualifications of the person reporting be properly appraised.

General Comments on Game Census Work. In the conduct of the game census, it has become increasingly apparent that until this work was started the department had very insufficient information regarding the wild life that it is required to conserve. The game census has been one of the means adopted to overcome this difficulty. It has become evident, however, that work of this sort is work for a specialist, such as is not now available in the department. Questions of fact regarding wild life are continually arising, which require for their proper solution as accurate information as a stockman has regarding his own herds. For instance, under the present system in force, if a petition is filed asking for additional protection for a certain species, or asking that protection be modified, as by permitting the taking of rabbits with ferrets, a hearing is held in the county where the petition originates. These hearings are usually well attended by the signers of the petition, though by no means invariably so, and it frequently happens that there are no appearances on the opposite side. The Commission then makes its decision, largely in accordance with the evidence presented at the hearing. It is true that the Commission may make an independent investigation, and frequently does so to the extent of its facilities. Such investigations, to be properly conducted, should be made by a trained naturalist, and there is now no provision for such a man in the appropriations.

JURISDICTION OVER TIDAL WATERS

It is desired to call the attention of the Legislature again to the fact that the Conservation Commission is without adequate jurisdiction over the waters of the marine district. Thus those waters are open to uncontrolled commercial exploitation. No objection could arise from this if that exploitation did not impair future fish resources. As a matter of fact, however, it greatly impairs it, and in some cases is resulting in the practical extinction of valuable species of fish.

The Commission believes that it should be given the same jurisdiction over tidal waters that it has over other waters, in order that the size of fish taken may be regulated in accordance with the ages at which they spawn, and that they may be permitted to reach their spawning beds unmolested. Until such regulation is put into effect, the marine fisheries will continue to be the weakest link in the State's entire scheme of conservation.

BUREAU OF INLAND FISHERIES

The receipts from the licensing of nets and set lines for the fiscal year ending June 30, 1917, were $19,902.23, which was an increase of $3,011.95. Licensed fishermen reported for the same period a total of 5,001,847 pounds of fish taken. The number of shad taken in the Hudson river showed a decided falling off, the total being only 25,206 pounds, as against 87,114 pounds for the year 1912, five years ago. It is thus clearly apparent, upon these figures alone, that unless some restriction is placed upon the use of nets below Verplank's Point, so that the shad can reach their natural spawning grounds, the shad fishery in the Hudson river will not long survive.

BUREAU OF MARINE FISHERIES

The receipts of the Bureau of Marine Fisheries from rentals, taxes, penalties, license fees, sanitary certificates and miscellaneous sources, for the fiscal year ending June 30, 1917, were $33,077.73. During this period leases were executed for a total of 2,239 acres. At the close of the year 246 leases, covering 13,529.15 acres, and 645 franchises, covering 13,659.11 acres, were in force. This gives a total of 27,188.26 acres under lease and franchise. The total number of acres surveyed during the year was 1,325.5.

As stated in the last annual report, the new rental charge for leases has been advanced to $2 per acre, instead of the former price of 25 cents per acre. The old price was altogether too low and it is believed that the new rental of $2 per acre is equitable for both parties. It of course increases the receipts of the bureau very materially.

During the year the United States government has restricted the use of large areas of oyster beds on account of war considerations. Whenever these restrictions are removed, the further cultivation of the beds will yield very important returns.

In the last annual report the Commission recommended that all boats working the State oyster grounds be required to take out licenses and fly a distinctive flag. A nominal fee of not to exceed $5 for each boat was recommended. Such a license provision would permit much more effective supervision and would also prevent the residents of other states working the New York State grounds.

The oyster business in the State in the past two years has met with some quite severe reverses, owing to the fact that the oyster seed, upon which the oystermen depend, has been very small in comparison with previous years, thereby forcing the planters to purchase a large portion of their seed from southern and eastern waters at a very great additional cost to them. Only the larger planters were able to do this to any great extent. However, in spite of this fact, there has been a normal yield of marketable oysters during the past year.

The majority of the oyster dealers are in sympathy with any enactment that will tend to raise the standard of purity of the oysters before the general public. Therefore it is especially necessary for this Bureau to be provided with a bacteriologist. At the present time it is necessary to depend upon information furnished by bacteriologists of the New York City Bureau of Chemistry, who furnish this data to the Bureau out of courtesy.

During the past year the State boat "Rednav" has been of great service to the Bureau, in aiding the Acting Surveyor and his assistants in making surveys and examinations of the monuments and signals in the marine district. For that work, it is very essential that the "Rednav" be supplied with a suitable power dory of sufficient size to carry material to and from shore. During the past year there were nine original surveys made, covering 513.9 acres, and 24 relocation surveys, covering 1,054.6 acres. During the period of June, July and August an inspection was made of the survey and triangulation stations along the north shore of Long Island. As these points control the entire system of shell fish ground surveys, it is essential that they be maintained and inspected annually. A total of 127 stations were inspected and new measurements taken to preserve their location, and eighteen tripods were painted and otherwise repaired. It is interesting to note that in the survey for a new chart of Huntington Bay, made for the United States Coast and Geodetic Survey during 1916, the geographical positions of the tripods under jurisdiction of the Conservation Commission in this vicinity, as computed by the Bureau of Marine Fisheries, were used by the Coast and Geodetic Survey, without any new survey being necessary.

From April 16th to 27th an examination of the natural growth of oysters was made in Staten Island Sound, from Ward's Point to Elizabethport, and at a hearing a few days later, the Commission decided not to issue leases for this area.

The " Rednav " also assisted in an examination to determine the condition and extent of the mussel beds on the north shore of Long Island, in an investigation conducted by the United States Bureau of Fisheries.

BUREAU OF FISH CULTURE

Since the filing of the last annual report, the State has suffered a great loss in the death of Dr. Tarleton H. Bean, who had occupied the position of fish culturist for the last ten years. Dr. Bean was a fish culturist of world-wide experience and reputation, and under his direction the fish cultural work of the State of New York took first rank among all of the states of this country.

Following Dr. Bean's death, steps were taken to obtain a fish culturist who would be able to build upon the foundation that Dr. Bean had left, and introduce constructive methods of fish propagation that would make it possible for the great number of streams and lakes in New York to yield their maximum supply of fish. It was felt that the problem presented was not simply that of producing greater numbers of the more interesting game fish, but rather that of making the State's waters give a maximum yield of the food varieties. This means an intensive development of the State's fish cultural work in all directions. Acting upon the advice of Hon. Hugh M. Smith, Commissioner of Fisheries of the U. S. Bureau of Fisheries, John W. Titcomb, who had been for many years in charge of the Bureau of Fisheries' Hatcheries and Field Stations in the United States and Alaska, had introduced fish cultural work into South America, and, as Fish and Game Commissioner of the State of Vermont, had been very successful in the intensive cultivation of that State's fishing waters, was appointed Fish Culturist.

Since Mr. Titcomb's appointment on March 1, 1917, a very careful study has been made of all of the State hatcheries and of methods of securing the maximum results from their operation. The declaration of war last April and the necessity that immediately arose for developing increased food resources gave an added stimulus to the work of developing this Bureau. The Commission feels that, great as the strides in fish culture have been, there are greater ones still to be taken. Our lakes and streams are by no means yielding their maximum in fish food. The Commission is satisfied, as a result of the study that has been made during the last few months, that they are capable of a tremendous increase in this direction. Some of the plans that have been worked out for accomplishing this end are briefly covered in the following paragraphs. It will be evident upon considering these plans that, in general, they can not be made to yield immediate results. It must be remembered that it takes several years to grow fish to edible size, even after all preliminary steps to plant the fish have been taken. If such an increased food supply had been created for this year's emergency, it would have been necessary to have started the work several years ago. The importance of undertaking the work at this time is therefore all the more apparent if we wish to save the State in the future from finding itself in a position where a large amount of most valuable food might have been available had adequate measures been instituted in advance.

The work of the Commission in developing the wider utilization of food fishes is capable of taking a long step forward, until it is comparable within the State's borders to developmental work conducted by the U. S. Bureau of Fisheries. Properly directed, such pioneer work will be productive of enormous quantities of food fishes in the future. The end to be kept in view in all fish cultural work is not simply the stocking of fish in the waters, but rather the ultimate taking of fish in large quantities.

The propagation of fish comes under the jurisdiction of the Fish Culturist, while the issuance of licenses for the commercial taking of fish is in charge of the Superintendent of Inland Fisheries. Accordingly, in the effort to develop greater quantities of fish food, both the Fish Culturist and the Superintendent of Inland Fisheries have cooperated.

Financial. During the fiscal year 1916–1917 the wages of hatchery employees amounted to $41,913.55. During the last six months of that fiscal year there was a general increase in the wages paid. The appropriation for the present fiscal year is $40,000, or $1,913 less than provided last year, and the increased wages which prevailed for only six months last year must prevail for twelve months this year. In order to avoid a deficit, the foremen were instructed to reduce the number of employees to a minimum without hampering the work during the periods of egg collections. By this means a saving has been effected for the first six months in the year of $1,145.11, and it is now believed that it will be possible to continue operations through the balance of the fiscal year without asking for an increase in the appropriation. It is not believed that efficiency in strictly fish cultural matters has at all been sacrificed. In matters pertaining to the physical conditions of the stations, undoubtedly more work would have been done had funds been available, and this favorable financial statement cannot be used as a basis for the appropriation for the next fiscal year. More increases in wages will have to be granted in order to hold the best men in the service, and with the plans for the increased rearing of fish to fingerlings and an extension in field operations, the larger appropriation already asked for seems to be desirable and necessary. It is believed, however, that at some of the stations the efficiency of past years can be maintained with less employees than it has heretofore been the custom to keep on the payroll. On the other hand, as the usefulness of some stations will be expanded, it may be necessary to increase the number of employees.

It must be borne in mind that the opportunities for field work in fish culture are limited only to the amount of funds available for its prosecution.

Improving the Efficiency of Hatchery Employees. The system in force in paying employees at the hatcheries, other than the hatchery superintendents, has been that of classifying them as laborers with a per diem rate of pay. It is believed that far better results can be accomplished by grading them according to their terms of service and giving them a monthly salary.

The man who is a real fish culturist, competent to go into the field and set devices for taking spawning fish, strip the fish and secure good eggs, is worth far more to the Commission than is the ordinary laborer, no matter how competent the latter may be at unskilled work. The fish culturist should be encouraged by receiving more wages than the man who is taken on temporarily during the busy season. To get the best results at any hatchery, practically all of the employees should be trained in fish culture, but at present there is not a sufficient incentive. It is just as necessary, in order to get the best results at a fish hatchery, to have the employees trained in fish cultural work as it is in the army to have trained soldiers.

The present policy of paying men wages by the day results in very few real fish culturists at the hatcheries. Even at an old established station like the Caledonia Hatchery, only three men out of ten on the payroll understand stripping fish. The proportion at some of the other hatcheries is the same as at Caledonia, while at a few of the stations not one of the men besides the foreman is competent to go into the field and collect eggs. If the employees are placed upon a monthly salary and promotion is based upon efficiency in fish cultural work, this will result in securing ambitious young men who are anxious to take up fish culture as a profession. All employees in the United States Bureau of Fisheries secure their positions through a Civil Service examination. They are taken into the service as Apprentice Fish Culturists and promoted according to their efficiency and period of service. As a result, the field personnel of the Bureau is made up very largely of young men who are a real asset to the Bureau.

Fish Food. The item of fish food is a very important and unavoidable one in connection with the rearing of fish to fingerlings before planting them. Approximately 100,000 pounds of food are annually purchased and distributed to the various hatcheries. During the past year the prices of the usual foods, such as beef and hog livers, have been steadily going up. Hog livers cost now more than was paid for beef livers a year ago. In order to keep within the appropriation of the past year, other foods have been substituted for liver. This food cannot be used exclusively; but by mixing it about half and half with the beef and hog livers, it produces satisfactory results. At the Chautauqua Hatchery during the latter part of the season, carp caught in the nets set for maskalonge work were ground up and satisfactorily used as fish food. Salt cod roe was substituted to some extent in order to reduce the price of food; but the price of this food is constantly rising. Each foreman has been cautioned to use any kind of food which is available locally, and this will include the rough fish which are caught during the spawning season when the men are taking more desirabe fish for spawning purposes.

A student from Cornell University, who has had training in fish food experiments, is employed at the Caledonia Hatchery, and is devoting a large share of his time to experiments with different kinds of fish food, with a view to ascertaining their nutritive qualities, and in the hope that a cheaper substitute may be found to replace the foods which have been commonly used in the past.

Distribution of Fish. The total output of fish fry and fingerlings during the calendar year 1917, as detailed in the accompanying table, was 475,729,323.

Fish Distributed, Jan. 1, 1917, to Dec. 31, 1917

Brook Trout, fry	1,849,000
Brook Trout, fingerlings	2,449,695
Brook Trout, adults	7,151
Lake Trout, fry	1,406,000
Lake Trout, fingerlings	1,566,675
Brown Trout, fry	159,000
Brown Trout, fingerlings	413,250
Brown Trout, adults	45
Rainbow Trout, fry	31,000
Rainbow Trout, fingerlings	636,574
Rainbow Trout, adults	96
Steelhead, fingerlings	284,660
Land Locked Salmon, fingerlings	20,245
Chinook Salmon, fry	230,000
Chinook Salmon, fingerlings	111,000
Whitefish, fry	28,351,000
Frostfish, fry	540,000
Lake Herring, fry	77,000,000
Maskalonge, fry	6,439,500
Pikeperch, fry	49,900,000
Yellow Perch, fry	4,800,500
Yellow Perch, fingerlings	178,575
Black Bass, fry	15,875
Black Bass, fingerlings	84,985
Black Bass, adults	21
Rock Bass, fry	2,320
Shad, fry	120,000
Shad, fingerlings	2,665
Smelt, fry	126,767,411
Sea Bass, fry	3,000,000
Tomcod, fry	129,600,000
Flatfish, fry	33,600,000
Lobster, fry	6,163,080
	475,729,323

This figure has been arrived at in a most conservative manner, and while it apparently indicates a falling off from the number of the preceding year, which was 541,751,567, it nevertheless gives results which will compare favorably in ultimate results with that of any other season. The smaller number of fish distributed is largely attributable to a very cold spring, which resulted in a falling off in the pike perch work, and further to the fact that in the report of shad and black bass propagated in 1916, the figures were estimated. Moreover, in 1916, 8,000,000 tullibee were propagated, whereas in 1917 tullibee were not handled at all, the reason for this being that tullibee are not taken by fishermen at the present time, and their extensive propagation accordingly appeared unwise.

During the year 3,537 applications for fish were filled as compared with 3,435 for the year 1916. With the exception of a few applications for pike perch, and a larger number for both large and small mouthed black bass, the allotments to applicants were as liberal as in previous years.

Fish Planting. During the last year the Commission has continued its work of thoroughly educating all applicants for fish as to the proper methods of planting. Large numbers of a booklet entitled "Fish Planting in Public Waters," which gives these instructions more fully than any other publication, have been distributed.

The proper observance of instructions on how to receive and plant fish, after they have arrived at the railroad station designated as the point of delivery, is highly essential to successful results. It is quite as important as propagation of the fish at the hatcheries. Unless the fish are to be properly planted it would be better for the State not to incur the expense involved in producing them.

In many instances, if funds were available, it would save wastage if trained messengers of the Commission could personally supervise the planting of every can of fish, but this would involve a special messenger trip to each individual applicant and multiply the expense now incurred in fish propagation. The only alternative is to furnish each individual applicant with explicit directions as to the importance of regulating the temperature of the water in the cans to that of the waters to which the fish are to be introduced, and to observe all other precautions conducive to successful results. With this end in view, the acknowledgment of each application has printed on it *Instructions How to Plant Fish.* When notice is sent to the applicant on what train to expect fish to arrive, it also gives definite instructions on how to plant fish.

In some counties there are well organized clubs, the directing heads of which, appreciating the importance of observing instructions, impress it upon their assistants; in these counties very good results are being obtained from the intelligent annual plantings which are being made.

Stream Survey of Oneida County. The stream survey of Oneida county, which was undertaken two years ago upon an experimental basis, has been completed and the results have been published in a bulletin and distributed largely throughout the county. This is the first time that the Commission has had available complete and absolutely accurate data regarding stream conditions over any large area. Strange as it may seem, the State has for years been shipping millions of fish for public waters without having authentic information regarding the suitability of those waters for the fish shipped. It is believed that the intensive study of Oneida county and the working plans that have been evolved as a result of this study will eventually overcome this difficulty for that one county. It is the intention of the Bureau of Fish Culture to obtain similarly reliable information as rapidly as possible for all of the State's public waters. This is absolutely necessary if hit or miss methods in fish planting are to be avoided, and if the efficiency which has already been developed in the hatcheries is to be extended to the streams.

The Whitefish. A careful study of the work that has been done during many years in the stocking of many lakes with whitefish leads to the conclusion that the policy of the State with regard to this fish has never been thoroughly worked out. While the whitefish is not to be classed for a moment with a number of other species as regards destructiveness to the spawn of other fishes, it nevertheless is a fact that the whitefish does eat spawn and young fry in lakes inhabited by trout. Moreover an examination of a number of whitefish stomachs indicates that in some of these lakes the principal food of the whitefish is the same as that of the trout existing under similar conditions. Thus it is a competitor of the trout and in trout lakes that have been intensively stocked with whitefish the latter is unquestionably being fostered to the detriment of the trout. In such lakes, however, most of which are in the Adirondacks, there is a more serious argument against practices heretofore in force. Though the State has for years been stocking these lakes with whitefish, it is nevertheless contrary to law to take them, other than in the great lakes, except by angling. In a limited number of the Adirondack lakes whitefish are caught by angling, but in many others they are not taken by angling at all, and thus for all practical purposes are given protection throughout the year.

It is important that the entire policy with regard to whitefish be revised and that the taking of these fish commercially be permitted in some of the lakes where they are abundant, thus making it possible for the public to obtain some benefit for the expenditures which have been made in stocking these waters. In other lakes, where it is not advisable to permit commercial fisheries operations, it would seem that the whitefish should be able to maintain themselves by natural reproduction in sufficient numbers to compensate for all that may be removed by angling alone, and that annual stocking hereafter is unnecessary in those waters. In other words, the Commission believes that the whitefish product of the hatcheries should be planted almost exclusively in waters which are fished commercially. Plans to this end are being developed.

The Adirondack frost fish is one of the minor white fishes which is abundant in some of the Adirondack lakes. It has been propagated by the State for years. It is not taken by angling, however, and it is unlawful to fish for it by any other method. It therefore seems futile to continue the propagation of this species unless some means are found whereby they may be caught and utilized as a food fish.

The tullibee, another species of whitefish, has been extensively propagated at Constantia and yet the public have derived no benefit from the expense thus incurred. For this reason the work was discontinued during the last spawning season. Attempts are being made by the Commission, however, to develop a method for establishing and regulating a commercial fishery for this species and if they are successful its propagation will be resumed.

The Carp. The German carp was introduced to the waters of New York a great many years ago, at a time when its habits and requirements as to water supply were not fully understood. As a result, they were planted in many of the clear water lakes and streams where they do not multiply or grow rapidly and cannot take the place of the indigenous food fishes of those waters. Nevertheless, they have thrived sufficiently to become a menace, in that they are destructive to the spawn of other fishes. Ordinarily, both the large and small-mouthed black bass are perfectly competent to protect their nests against all native fishes, and it is the custom for the male bass to guard the nest until the young have hatched and scattered; but the carp travel in schools and are thus enabled to crowd the bass from the nest. Their activities are not confined to the spawning beds of the bass, but have a detrimental effect upon the spawning operations of all species with which they come in contact.

For this reason it seems desirable to reduce the carp to a minimum in all of the inland lakes of the State, not for the purpose of fostering a commercial fishery, but for the purpose of clearing these lakes of a fish which is so hostile to more valuable food and game fishes. The Commission, therefore, intends that information be gathered and plans be made to provide for the removal of the carp next spring during the spawning season, either with State nets or by licensing fishermen to operate under proper restrictions. In waters where the bottom permits of seining, this will be the best method to effect the capture of the carp, because any of the more valuable food or game fishes which are taken in the seine may be returned to the water without injury. They can also be caught in pound or trapnets and the more valuable fishes culled out and returned to the waters unharmed.

Marine Fish Hatchery Needed. In the absence of a marine hatchery the Commission's efforts to increase the production of marine fishes is quite limited. Eggs of the flat fish and tom cod are obtained from fish destined to market, the points of collection being a day's journey from Cold Spring Harbor, where the facilities for hatching them are also limited. Nevertheless this work is conservation of the most important kind. Plans are under consideration for the extension of this work by the establishment of inexpensive, permanent collecting stations, at which the eggs may be held in hatching jars for periodical transfer to Cold Spring Harbor, and at which a liberal portion of the eggs may be hatched with a view to distributing the product near where the eggs are collected.

The lobster cannot be extensively propagated under existing conditions, but if the Commission had facilities to rear the fry through the early embryo stages, far better results would follow.

For such operations and for an extension of marine fish culture on a scale commensurate with its importance, a suitably located marine hatchery is necessary.

Fish Cultural Recommendations Requiring Legislation

In the further development of fish cultural operations, the Commission desires to make a number of recommendations which will require legislation before they can become effective. These recommendations are detailed in the following paragraphs:

Utilization of Portions of the Erie Canal for the Production of Food Fishes. *It is recommended that such portions of the old Erie Canal as can be supplied with water by gravity and drained by gravity be developed for the propagation of various species of food fishes which are handled by the method known as pond culture.*

Following the construction of the barge canal, many sections of the old Erie canal have fallen into disuse. Some sections will be retained by the State as a protective measure. Some sections have already been turned over to the Land Board for disposal. Some of the sections retained for protective measures and some of the condemned sections may be, at nominal expense, supplied with water and drained by gravity. By arranging to regulate the water supply and by the construction of baffle dams at the locks or at other locations favorable for economical construction, many sections of the canal may be converted into fish ponds quite as favorable for pond cultural operations as the ponds of the

St. Lawrence and Oneida hatcheries, but having the advantage of being of much larger area.

The ponds at these hatcheries are now used for the propagation of black bass. In order to successfully produce the basses, either large or small mouth, it is customary to maintain a series of ponds of from one-half to one or two acres in area, and a well built pond cultural station costs anywhere from $25,000 to $100,000. While it is evident that we must depend very largely upon a protective close season, when the bass are spawning, for maintaining the supply, the present pond cultural facilities are entirely inadequate for meeting the demands of applicants.

The Oneida hatchery has seven ponds, the total area of which is approximately two and one-third acres. The St. Lawrence hatchery has five ponds, the total area of which is a little less than three acres. A section of the old Erie canal less than one-third of a mile long has more area than the entire pond system at Constantia. The entire pond area of the St. Lawrence hatchery amounts to less than a half mile section of the Erie canal.

The sections of the canal to be selected for pond cultural operations will run from 60 to 70 feet in width, although there will be some places where they are wider. The length of each section will be gauged generally by the distance between the locks, but in most instances will run from a quarter of a mile to two miles in length. It is estimated that somewhere between twenty and thirty miles can be advantageously utilized with a very small outlay in arranging the water supply and drainage. In other words, at comparatively small expense, we can produce in the abandoned portions of the canal somewhere from 20 to 50 times as many food and game fishes as it is possible now to produce at the pond stations.

There are many desirable food fishes, like the yellow perch and the catfish, which can be produced and distributed as fingerlings. It may even be possible to produce pikeperch fingerlings under such favorable conditions as the canal offers.

The canal should be used largely for producing common food fishes, although the basses should be raised in some sections to enable the Commission to fill the many applications which it is now impossible to supply adequately.

The Superintendent of Public Works and the State Engineer are ready to cooperate in this plan to make productive sections of the canal which otherwise are of no value except for the purpose of protection against damage by floods.

The State of New York has, in the abandoned canal, an opportunity for pond cultural operations exceeding in area all of the ponds for similar work now under the control of the United States Bureau of Fisheries.

Protection of Black Bass. *It is recommended that the close season on the black bass be extended to July 1st in order to more nearly cover the entire spawning season.*

It is well known to anglers that the male bass, both largemouth and smallmouth, protects the nest while the eggs are incubating and for a short period after the fry have hatched, after which time the young scatter to forage for themselves. While protecting its nest, the bass resents any intrusion, and will seize almost anything dropped onto the nest. He will take even an unbaited hook dragged over it. The capture of these guardians of the eggs and very young fry is easy and requires no skill; but it is a conservative statement to say that for every adult bass removed from the nest there is a corresponding destruction of from 500 to 5000 eggs or fry, a number exceeding the average of little bass supplied by the Commission on each application for stocking purposes.

In normal seasons the basses have finished spawning in most New York waters on or about July 1st. The past season was so late that the spawning season extended well past the middle of July.

If the nesting bass are protected until the 1st of July, it is believed that, in waters suitable for them, they will be able to maintain themselves by natural reproduction to the limit of the natural food supply.

Regulation of Fish Planting in Public Waters. *The importance of a permanent policy with regard to the selection of species which should be introduced into public waters should be recognized, and any person should be penalized who obtains fish by misrepresentation or who plants fish obtained from the state in waters other than those which his application describes.*

It is well recognized that many of the waters in this State, as well as elsewhere throughout the country, have been so changed by the denudation of forests or by other causes connected with the advance of civilization that the kind of fish which will thrive best in them is often not an indigenous species. It is well known also that in the early history of fish culture a great many mistakes were made by the introduction of foreign species of fish to waters to which they are not naturally well suited. The carp was indiscriminately introduced throughout New York and New England, where the waters are very generally cold and clear, without regard to the nature of their habits and natural requirements. The carp is a warm water fish and produces best results in sluggish streams with muddy bottoms and having a prolific growth of vegetation. It is very destructive to spawning beds of other fishes. Even the black bass, which protects its nest during the period of incubation and for a short period after the fry have hatched, is unable to cope with the German importation, which has a habit of approaching in massed formation, driving the bass from the nest and completely destroying the eggs or fry. There are very few waters in the State of New York in which the carp should be at all encouraged, and in most waters where they now exist every possible effort should be made to keep their numbers reduced to the minimum by licensing the use of nets during the spawning season, when they may be most easily taken, or at other seasons of the year under proper regulations.

The black bass, both large and small mouth, are naturally warm water fishes, but in the early days of fish culture they were introduced into a great many cold water ponds and lakes much better suited to the trout and salmon family. As a result, they produced rather indifferent fishing, but in many instances have practically exterminated the trout.

The brown and rainbow trout have been extensively and successfully introduced into many waters of this State. In some of the larger streams in which the conditions have changed as to water temperature, it is possible that the waters are best suited to these species. They are, however, very destructive to the native brook trout, and care should be taken to safeguard the streams which are still suitable for and inhabited by the native trout.

One might go on almost indefinitely in making illustrations such as these; but they are sufficient to show the importance of proper regulations and the necessity for the cooperation of all anglers, to the end that the integrity of our waters may be preserved against the introduction of species of fish foreign to them without the careful deliberation and approval of this Commission.

Regulation of Fish Planting in Private Waters. *Legislation is recommended making fish planting in private waters subject to regulation and control of the Commission.*

Anglers, like other people, have their fads. Some men prefer bass fishing to any other kind. It may happen that a man who is fond of bass fishing will stock his private waters with black bass, notwithstanding the fact that the waters are better suited to trout. Perhaps no harm is done in such a case, unless the introduction of bass into these private waters leads to the stocking also of public waters with bass to the sacrifice of the trout. In another instance, the angler may prefer brown trout to the native brook trout, and proceed to introduce them into native trout waters which do not contain the foreign species, thereby introducing a species which will destroy the fishing for native trout in waters to which the private waters are tributary. This is the argument for recommending a law which will place under the control of this Commission the regulation of all plants of fish made by individuals, whether in streams, ponds or lakes. It is the only safeguard against the ruin of many fishing waters.

State Fish for Private Waters. *It is recommended that the Commission be empowered to sell fish at cost for stocking private waters, when the applicant is so situated that he cannot easily obtain them from commercial hatcheries or other commercial sources, in the same way that it sells young trees for reforestation. The farmer should be encouraged to build farm fish ponds by giving the Commission authority to furnish sufficient fish for brood stock free of charge.*

It is often very inconvenient for individuals who wish to stock privately posted waters to obtain fish suitable for them. Probably more people use trout than any other species, and trout are usually obtainable from commercial hatcheries; but in some instances the cost of transportation is almost prohibitive. It is recommended that the State have authority to sell to individuals fish for stocking their privately controlled waters, just as the Division of Lands and Forests has authority to sell young trees for reforestation, provided that it does not interfere with the supply necessary to fill all applications for public waters. The overflow from privately stocked waters is almost invariably beneficial to public waters below them, and this is one reason why the restocking of private waters should be encouraged.

In this connection, attention is called to the fact that men who have been encouraged to build farm fish ponds have been accustomed to ask for some common fish like the yellow perch, catfish, or some other warm water species. They cannot lawfully go to public waters and net the fish, and to stock such a pond by angling is rather slow and difficult. The Commission believes that it should furnish sufficient fish for brood stock to any farm fish pond, and that the first stock of brood fish be furnished free of charge when the species most suitable for such waters is not otherwise obtainable in the vicinity. Pennsylvania has a law of this kind which is reported to work well.

Control Over the Lower Hudson River. *Control by the Commission of the fisheries of the Hudson River should be extended to its mouth, in order that the shad, striped bass and other anadromous fishes may have proper protection in their annual migration to their natural spawning grounds in fresh water.*

Efforts to materially increase the shad cultural work at the Linlithgo hatchery by obtaining large quantities of spawn from the Hudson river has resulted in the conclusion that unless proper regulations can be instituted over the fisheries in the Hudson river below the spawning grounds, and in the salt and brackish water at the entrance of the stream, the shad fishery on the Hudson river is doomed. Notwithstanding the fact that the work of spawn collection was placed under the personal supervision of the Field Superintendent, who devoted his time to it with very excellent cooperation from fishermen, the total number of eggs which it was possible to collect amounted to only 450,500. This fact indicates that the Hudson at the present time is almost depleted of shad. The Commission's lack of jurisdiction below Verplank's Point makes it impossible to restrict the large number of nets below that point, so that the shad which run in from the sea to spawn do not reach the upper waters of the river. The extinction of the entire species in the Hudson river is therefore in danger unless conditions are changed. It seems to the Commission that the very limited interest of the few fishermen on the lower reaches of the river should at last give way to the very much larger public interest in preserving these fish.

The conditions which now prevail with reference to the shad are equally true with reference to the striped bass, the white-perch and other valuable anadromous food fishes. The fact that some of these fish do enter the Hudson and are caught before they reach the spawning grounds is sufficient argument for laws which will permit their reaching the spawning grounds in order that with the aid of artificial propagation there may be hope of restoring the fishery.

The Private Posting Law. *It is recommended that an amendment be made to section* 182, *subdivision* 5, *of the Private Posting Law, so that the owners of fishing rights shall not be entitled to exemplary damages unless they annually stock the portions of streams posted by them, and making it unlawful to maintain a private poster, of the kind prescribed by law, beyond the period of one year after the waters have been stocked at the owner's expense.*

Section 182, subdivision 5, of the law provides that owners of lands or of hunting and fishing rights thereon may obtain exemplary damages in the sum of $25 for each offense or trespass after such lands or waters have been duly posted in accordance with the provisions of section 361. This means that a person owning land through which only a small section of a stream flows may post this section against fishing, notwithstanding the fact that the State is stocking portions of the stream which are not posted. Anglers refrain from stocking many streams for the reason that it will benefit individual owners of posted portions.

There appears to be no provision which safeguards public rights in fishing against private posting of certain sections after the entire stream, not posted up to that time, has been thoroughly stocked from the State hatcheries. It will, of course, be acknowledged that any landowner has a perfect right to prohibit the public from trespassing on his land, either for fishing or for other purposes, notwithstanding the fact that the fish in the stream flowing through his land are State property. The point at issue is, whether such landowners, whose waters have benefited by the introduction of fish from the State hatcheries, should receive, in addition to actual trespass damages, exemplary damages in the sum of $25, under the existing law, unless the landowners themselves have been to personal expense to improve the fishing in the portions controlled by them.

It is suggested that a remedy for the present apparent inconsistency in the law may be effected by requiring that every landowner who wishes to privately post his stream against fishing and receive exemplary damages, shall himself personally stock, at his own expense, annually, the portion of the stream which he desires to control, and annually file a notice with the town clerk when the stocking is done, making affidavit to the number of fish introduced. Provision should be made in this law for the number of fish which an owner must introduce in a given length or area of stream which he controls, varying the number according to the size of the fish introduced.

When a stream has been annually stocked by the State for a number of years, the owner should not be allowed to exclude the public from the portion flowing through his lands without filing notice of his intention to do so five years in advance.

When stocked at private expense, a riparian owner has some real reason for expecting more protection than is afforded by the common trespass law. A great many of the people who now privately post undoubtedly do contribute fish for stocking their waters. If all individuals who privately post portions of streams should stock at their own expense, it will then be quite proper and just that the State stock the portions of the stream which still remain open to the public.

Legal Size of Whitefish. *The law which provides a minimum weight of one and three quarters pounds in the round for the Great Lakes Whitefish should be amended so that this provision shall not apply to the Adirondack Lakes. In place of this* *limit by weight, there should be provided a statutory limit of twelve inches in length.*

It has been found that the whitefish in the smaller Adirondack lakes seldom attain a weight of one and three-quarters pounds. In the fish cultural operations at Lake Clear it was noted that the average length of mature fish is about 12 or 13 inches.

The practical working out of the law in the Adirondack lakes accordingly has been very largely to prevent the taking of mature fish perfectly capable of providing considerable food supply. Amending the law to provide a minimum length of twelve inches will thus protect the fish until they have reached spawning age and make their taking legal when they are large enough for this purpose.

Eliminating Bass and Perch from Trout Waters. *When found in waters which are being stocked with trout, the black bass should not be protected during the spawning season.*

It is inconsistent to protect any of the spiney rayed fishes in waters where their elimination is much to be desired. The Commissioner should have authority to annul the protective close season for bass in such waters, thus permitting angling for bass to begin when the open season for trout begins. On such waters there should be no statutory limit on bass. The elimination of the spiney rayed yellow perch in such waters is also to be encouraged.

DIVISION OF LANDS AND FORESTS

DIVISION OF LANDS AND FORESTS

Clifford R. Pettis	*Superintendent of State Forests*
William G. Howard	*Assistant Superintendent of State Forests*
Albert H. King	*Forester*
Arthur S. Hopkins	*Forester*
Benson H. Paul	*Forester*
Karl Schmitt	*Forester*
Kinne F. Williams	*Forester*

DIVISION OF LANDS AND FORESTS

The work of the Division of Lands and Forests has, during the year, increased in each of the usual lines of work, and other new duties have been added. In addition to the general work of administration of the Forest Preserve, forest fire protection and reforesting, it has been necessary to include the examination and purchase of lands as additions to the Forest Preserve, make and execute plans for the control of white pine blister rust, and respond to the demands that have been made upon us due to the war. These various topics will be discussed under appropriate headings.

THE FOREST PRESERVE

General. The plan of protection pursued in previous years has been followed the past year. Surveyors have been engaged in relocating the old lines, which constitute the boundaries of the State lands, as part of a comprehensive determination of boundaries and location of the State's property. Surveys have also been made for use of the Attorney-General in prosecuting cases in litigation. A vast amount of work has been done in perfecting records regarding titles of land.

Area. The extent of the Preserve has been slightly increased by purchases. It has also been reduced as a result of litigation, in which the courts, after due trial, decided that the State was not the owner of the land. The figures as to area are as follows:

Adirondack Preserve	Acres	Acres
Area January 1, 1917		1,701,894.72
Additions	809.81	
Deductions	568.05	
Net increase		241.76
Area January 1, 1918		1,702,136.48

Catskill Preserve		
Area January 1, 1917		110,970.45
Additions	255.00	
Deductions	734.23	
Net decrease		509.23
Area January 1, 1918		110,461.22

SUMMARY

Adirondack Preserve	1,702,136.48
Catskill Preserve	110,461.22
Total January 1, 1918	1,812,597.70

These figures include but a few hundred acres of land purchased under the referendum appropriation. A large area has been accepted by this Commission and the Commissioners of the Land Office, but is not included above because the Attorney-General has not yet certified as to title and payment has not been made.

Trespass. The taking of wood from state land has almost ceased. There is probably no property of large size in the State where trespass is comparatively less. The rangers, who have been very diligent, have discovered and reported thirteen cases of cutting trees or removing wood. The aggregate value of the material is calculated to be $377.16. Almost three-fourths of the total is included in one case, where the trespasser had a deed to the land where the trees were cut and supposed that he was cutting on land which the State did not claim.

Occupancy. The policy inaugurated in the fall of 1916, of clearing up all cases of occupancy, has been pursued, and now there are but 164 cases of known occupancy of State land. Of these, 124 cases are in the hands of the Attorney-General, and actions are either pending or the cases are in preparation by him. The remaining 40 cases are in preparation for litigation or determination of essential questions. The clearing of the Forest Preserve of the many cases of illegal occupancy will, in the course of a few years, save the State vast sums of money. There were scores of cases where people would in a year or two more have been able to claim adverse possession. This is all prevented and a vast amount of expensive litigation made unnecessary. At the same time the State's interests have been safeguarded and the title made secure.

Fire Loss. During the past year but two hundred and eighty-three acres of the State land were touched by fire. This means that only one acre out of every six thousand four hundred and four acres owned by the State was injured. None of this land contained valuable timber and the damage is relatively small.

Acquisition. The Legislature in 1917 made available two and one -half million dollars of the seven and one-half millions authorized for the purchase of additional lands for the Forest Preserve. During the summer and fall seasons several timber appraisers and foresters with field parties have been engaged in making appraisals and valuation surveys of lands offered whose purchases were desirable. We have so far examined 268,468 acres, of which the purchase of 13,609.84 acres has already been approved by the Commissioners of the Land Office. Negotiations are now complete or pending on many other parcels.

Protecting Lake George Islands. The Legislature last year appropriated $10,000 to be expended in protecting the shore lines of a large number of islands in Lake George, that were being rapidly washed away by wave action. The work was started in the early part of the summer, and, at the time of writing this report, approximately 5,000 tons of stone have been moved and placed on the shores of twenty-seven islands. Seventeen of these islands are entirely completed. The work is being continued on the ice, and it is expected that several more islands will be finished in this way. Up to date this has all been done for the expenditure of only approximately $6,000. In designing the protecting walls, similar structures upon privately owned islands, which have withstood the elements for years, have been used as a guide, both as regards permanency and harmonizing with the surroundings.

One of the most gratifying features of this undertaking has been the very practical and valuable cooperation of a great many private individuals interested in the welfare of the Lake George islands. The men employed by the State have had free use of nearly all of the equipment employed, including two motor boats, three barges, one hoist, two houses, a number of small boats, and one house-boat all equipped. In addition to this all of the stone used has been donated. This cooperation, together with careful supervision to make the appropriation go as far as possible, has resulted in a lower cost than that originally estimated.

It is of the utmost importance now, not only for the protection of other islands still seriously threatened, but also in the interest of ultimate economy, that the work be continued through another year. By retaining the present equipment and gang of men, the original estimate of $30,000 for completing the work should be materially reduced. An appropriation this year of $10,000 would finish protecting all of the islands in the greatest peril of being destroyed, and fully 80 per cent of all that should be done could be completed.

Unless the protection of these islands is quickly effected, some of the most beautiful of them will lose the large trees which add so much to the beauty of the lake, and will be stripped of their soil, making it impossible to ever bring them back to their former condition. Others which are made up entirely of soil deposits will completely disappear, leaving nothing but shoals under the surface of the water, as obstructions to navigation.

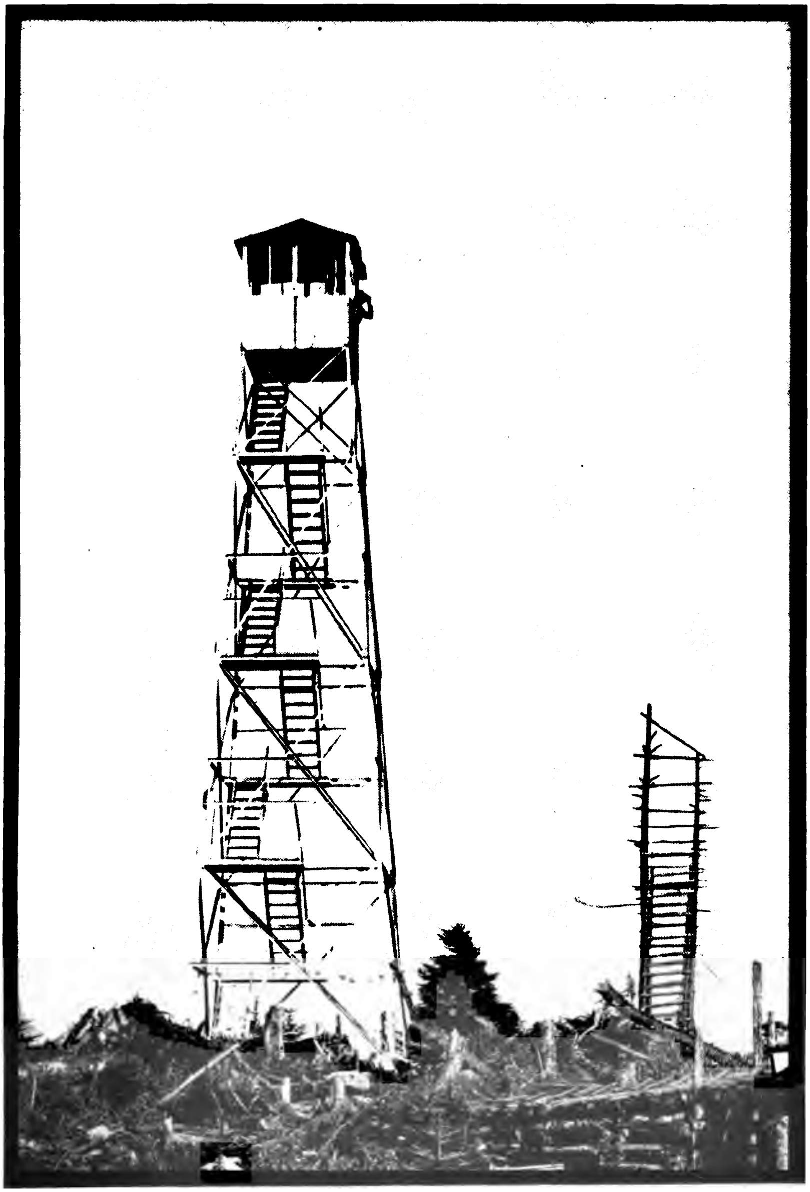
REFORESTING

The establishment of forests on the unproductive forest areas of the Forest Preserve has progressed at a greater pace than ever before, and in the face of many labor difficulties; but the reforesting of privately owned lands has decreased. The same methods as used heretofore have been followed.

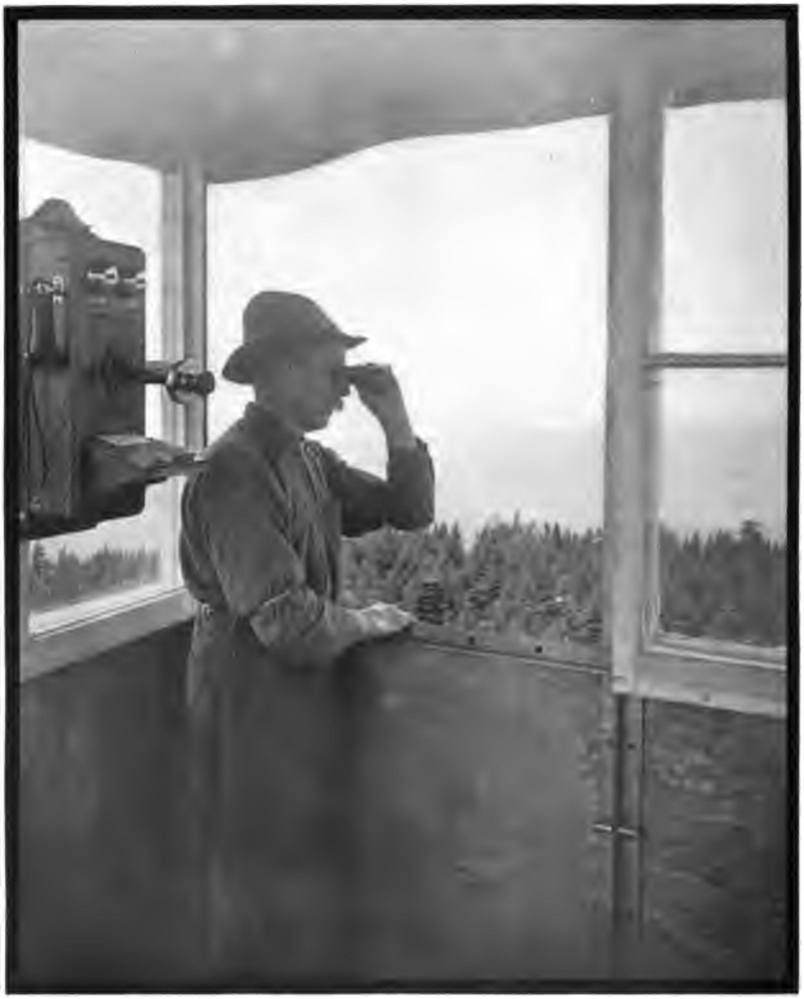
Nurseries. An inventory of the trees in the State nurseries on November 16, 1917, showed a total of 23,504,800.

This is 4,570,550 less trees than at the corresponding time last year. The decrease is chiefly in the quantity of one year-old seedlings, due to the fact that on account of the white pine blister rust no white pine seeds were sown in the nurseries last spring.

A transplant nursery was established last spring near Goldsmith. At this place 866,250 white pine seedlings were transplanted by convict labor supplied by Dannemora prison. About twenty men were engaged in this work and they rendered very efficient service.



The modern steel tower on Adams Mountain, and the wooden tower that it replaced.



The glass enclosed cabins of the steel towers greatly increase the efficiency of the observers.

The output of the nurseries may, owing to the scarcity of seeds, be reduced for the next few years. The Norway spruce, Scotch pine and European larch seeds are imported, and at the present time good seeds are not obtainable.

The total output of trees from the several nurseries during the year was 6,761,000. This is an increase of 15,000 over the quantity supplied in 1916. -

State Institutions Receive Trees. There were supplied to various state institutions 1,065,800 trees for reforesting their lands. This stock was furnished without charge.

Reforesting the Forest Preserve. A new high record has been made this year in reforesting the State land in the Forest Preserve. The spring and fall planting made a total of 4,059,000 trees. This is an increase of 1,029,000 trees over the highest number ever planted in a single year and 1,184,000 more than planted during 1916.

The planting during the spring was the most extensive. There was then planted 2,855,970 trees at an average cost of $6.77 per thousand. The fall planting required 1,103,350 trees and the average cost of planting was $6.37 per thousand. An additional 100,000 trees were planted during the fall by inmates of the Rome Custodial Colony at Indian Lake, at a cost of 88 cents per thousand for supervision.

On account of the scarcity of help, women were employed for some of the field planting at Onchiota, Bloomingdale and Merrillsville, with excellent success.

Sale of Trees. The purchase of trees by private owners for planting decreased nearly 50 per cent, the sales amounting to 1,636,215 trees. The receipts from this source were $4,368.65. The decrease is due to shortage of labor and the restrictions placed upon the sale of white pine.

White Pine Blister Rust. The discovery of the white pine blister rust has had a very important bearing on our reforesting plans. Before this danger was encountered the white pine was the most satisfactory tree for planting.

The plans were to use it most generally and, therefore, its seed was extensively sown in the nurseries. Sowing the seed stopped last year as soon as the seriousness of the situation developed, and none of these seeds will be sown next spring. We still have in our nurseries nearly ten million white pine seedlings and transplants, and it is planned to use this stock where there are few or no currant and gooseberry bushes and the disease can be controlled at a minimum cost. This method will save this planting stock. The use of white pine in other places will be discontinued until some practical plan of disease control at a reasonable cost is worked out. It is also planned to sell these trees at a reduced price to land owners who will clean their planting sites of gooseberry and currant bushes.

FOREST FIRES

Fire Conditions and Losses. The season of 1917 has been one of the most successful fire seasons on record. While the year 1916 saw a somewhat smaller acreage burned over than in 1917, the total number of fires in 1917 and the combined cost of damage and expense was less than in any previous year for which authentic records are available.

The record is particularly good in the Adirondack region, but this may be attributed to a great extent to the unusually wet weather, which prevailed for a greater part of the season. There was, however, a very dry period during a portion of the month of August in certain parts of the Adirondacks, and during the month of November before the snow came.

In the Catskills, however, there was a prolonged period of extremely dry weather in the early spring and another comparatively dry time in November, which resulted in rather a large acreage being burned in that section. However, it redounds greatly to the credit of the fire protective force that the damage and expense of fire fighting were kept down to such small figures, for, unquestionably, severe fires would have resulted in the dry periods had not our organization been prepared to attack each blaze as soon as it started.

The tables accompanying this report summarize the fires of the year, classified by counties and causes. The total acreage is less than half of that burned over in any year since 1907, with the exception of the year 1916. It is particularly notable, however, that not an acre of virgin timber was damaged by fire in 1917. The average acreage per fire, 16 acres, is slightly larger than the average for 1916, but this is due to a few fires of comparatively large acreage, which occurred in the early spring and late fall when fire travels fast. In the fall fires, particularly, practically no damage was done, since the flames went over the ground so rapidly that they only scorched the top layers of dead leaves on the ground and hardly damaged the standing trees. Out of a total of 234 fires reported in the Adirondack and Catskill regions, nine burned over an area of over 100 acres.

The damage done by fires is reported as $2,630. Considering the acreage burned over, this is very slight and demonstrates the fact that fires were for the most part kept out of the valuable timberlands. Nearly two-thirds of the acreage burned was brush and waste land.

Preventive Measures. There is not a great deal of new work to report in the conduct of the campaign of education which the Commission is constantly carrying on to make the public appreciate the danger of forest fires. Warnings have been continued in railroad time tables, telephone directories, and other similar publications. Two new types of cloth fire notices have been prepared and posted in the woods by the members of the protective force.

In the early part of the year, a large additional quantity of " Care-Carelessness " posters, which were originally published in 1916, were distributed throughout the State. The Boy Scouts aided materially in the distribution of these posters.

It is felt that considerable good has been accomplished by the preparation of the motion picture reel, entitled " The Match in the Forest." The Department has this year endeavored to strengthen this reel and to prepare a new reel which will be even more attractive and will teach the lesson of care with fire even more forcibly than the original.

Work with the various railroads in the State have been continued with the idea of insuring the clearing of railroad rights-of-way of inflammable material and of insuring the operation of only those locomotives which are properly equipped with fire protective devices.

About five thousand inspections have been made of locomotives operated within the State, although the Commission has adopted the policy of requiring the railroad companies to make their own inspections pursuant to the law, and to check up those inspections as far as possible. Generally speaking, the railroad companies have complied with the law. However, during the past few months, the demand for all available motive power has been so great and the labor situation so acute that in some cases defective locomotives have been operated.

The labor situation has also prevented, in a few cases, the clearing of rights-of-way to the best advantage, but on account of the lack of serious fire danger, the Commission was disposed to be lenient in those cases. It is believed that all rights-of-way will be placed in a satisfactory condition before the beginning of the fire season of 1918.

The only really bad case of failure to maintain locomotives in proper condition occurred on one of the railroad lines operated in the Catskill region, and on this line fires were started by defective locomotives. The Department has already transmitted the facts to the Attorney-General, with the request that actions be brought in accordance with the statute, which prohibits the operation of locomotives in a defective condition.

Causes of Fires. The classification of all the fires in the fire towns during the year 1917 by causes has been made and is here submitted:

Smokers	62
Locomotives	52
Fishermen	25
Berry pickers	20
Hunters	19
Burning brush	15
Campers	12
Lightning	11
Incendiary	5
Children	5
Lumber jacks	2
Bee hunters	2
Burning buildings	2
Paper balloon	1
Burning sulphur	1
Total	234

Smokers caused the largest number of fires, as has been the case for several years last past. Locomotives, however, have been a close second in causing fires, although, with the exception of the one or two fires in the Catskills referred to above, only a small acreage was covered by these fires. It is notable that many of the fires caused by locomotives burned less than one acre. The rendering of reports of railroad fires by both our own rangers and the patrolmen employed by the railroad insures every fire being reported, and the damage is nowhere near commensurate with the number of fires.

Fishermen, berry pickers and hunters caused about the same number of fires. It has been our effort to appeal to these people through the fire signs, which are posted throughout the woods, but the fact that those people are in the woods when conditions are best for fires, and the dry spring and fall of this year, resulted in some damage by them. However, it is believed that if an accurate count could be made of the total number of persons of these classes who were in the woods, it would be found that only a very small percentage of them were careless enough to start forest fires.

Violations of the Fire Law. Violations of the fire law have been kept down, as will be shown by the following table:

Offense	Total number of cases reported	Cases pending	Cases closed	Recovery
Failure to lop tops..	33	6	33	$547 70
Causing forest fires..	40	4	37	[illegible] 83
Setting fires to clear land	14	1	15	60 55
Failure to maintain railroad patrol....	1	..	1	25 00
Totals.........	88	11	86	$840 18

This table shows violations of the so-called Top Lopping Law, as well as violations which included the causing of forest fires through neglect and the setting of fires to clear land without permit. The rangers are constantly instructing the public with regard to the permit law and the number of fires set in this manner is decreasing slowly.

Fewer violations of the Top Lopping Law were reported in 1917 than in 1916. The majority of the lumbermen are in sympathy with the law and it is notable that few violations are reported against the large lumber companies, whose employees are usually familiar with the provisions of the statute.

In settling cases of violation, it has not been the endeavor of the Commission to collect large sums of moneys as penalties, but rather to bring the violators to an appreciation of the necessity for compliance with the sections which have been designed primarily to prevent forest fires. The land owners as a whole are in hearty sympathy with the statute and, in fact, some of the provisions have been inserted at the suggestion and with the backing of large associations of timberland owners.

Protective Measures. A force of 65 rangers and 52 observers was employed during the greater part of the fire season. An attempt has been made to improve the equipment of observation stations and telephone lines. About 18 miles of new telephone lines have been constructed during the season, including a line 10 miles long from Elk Lake in Essex county to lumber camps north of it, and lines in the vicinity of the Adams Mountain observation station. Six miles of line in District 4 have been built to connect with a new observation station placed on Hadley mountain.

Seven new cabins were built for observers on mountain stations to replace buildings which had deteriorated and were unfit for further use. These cabins were placed on the following mountains: Hurricane, Blue, Kempshall, Rondaxe, Hadley, Tremper, Twaddell.

Continuing the policy of providing most of the observation stations with steel observation towers equipped with an enclosed room on the top, the Department erected thirteen towers during the year. One of these was of the lighter type of steel tower purchased in 1916, and was placed on Hadley mountain in Saratoga county. Our experience with the towers purchased in 1916 demonstrated that greater satisfaction could be procured by using a heavy type tower, equipped with stairs, instead of the ladders which were on the 1916 towers. Twelve new towers of this type were therefore purchased and erected on the following stations:

Steel Towers Erected in 1917

Station	*County*	*Height of Tower*
Adams	Essex	47 feet
Belfry	Essex	47 feet
Blue	Hamilton	35 feet
Cat	St. Lawrence	47 feet
Catamount	St. Lawrence	35 feet
Hunter	Greene	60 feet
Loon Lake	Franklin	35 feet
Lyon	Clinton	35 feet
Poke-O-Moonshine	Essex	35 feet
Rondaxe	Herkimer	35 feet
Snowy	Hamilton	22 feet
Tremper	Ulster	47 feet

Practically all the labor in the erection of these towers was performed by members of the ranger force. The total average cost of the towers, including the original purchase price, transportation and expense of erection, exclusive of ranger labor, was about $530. For the expenditure of this amount the State has secured the finest kind of an observation tower for the stations, and it is hoped that practically all the stations may be so equipped within the next two or three years.

In this connection the Department desires to acknowledge the assistance given by lumber companies and other timberland owners in the transportation of these towers from the railroad to the mountains. In a number of instances the entire expense of such transportation was borne by the lumber companies whose lands were protected by the station in question.

New observation stations were established on two mountains, one on Hadley Mountain, in Saratoga county, as has been mentioned above. This was to take the place of the station formerly maintained on Ohmer Mountain, in Saratoga county, which was discontinued in 1916. The second was constructed on Tremper Mountain, near Phoenicia, in Ulster county. There is a large territory covered by this mountain, much of the land being owned by the State, which was not visible from any of the stations previously operated in the Catskills.

Weeks Law. Under the provisions of the Weeks Law, an allotment of about $4,850 was made by the Federal Department

Forest Fire Losses, 1917, by Causes

CAUSE	Number of fires	Total acreage burned	Acres private land burned			Acres State land burned			Value of standing timber destroyed	Value of logs, lumber, etc., destroyed	Value of buildings, fences, etc., destroyed
			Second growth	Brush	Waste	Second growth	Brush	Waste			
ADIRONDACKS											
Smokers	49	517	191	245	76	3	......	2	$240 00	....	....
Locomotives	19	47	6	11	30	......	......	......	20 00	....	....
Fishermen	25	262	40	183	35	1	3	......	75 00	....	....
Berry pickers	19	200	122	65	13	......	......	......	365 00	....	....
Hunters	15	253	23	28	86	82	13	21	10 00	$15 00	....
Burning brush	7	315	2	249	11	......	40	13	30 00	....	$400 00
Campers	12	29	14	10	4	1	......	......	145 00	....	....
Lightning	11	3	2	......	......	1	......	......	15 00	....	....
Incendiary	3	12	......	......	2	......	1	9	....	10 00	....
Children	3	21	21	......	......	......	......	......	30 00	....	....
Lumberjacks	2	1	1	......	......	......	......	......	5 00	....	....
Bee hunters	2	3	1	2	......	......	......	......	25 00	....	....
Burning buildings	1	*	......	......	......	......	......	......	....	....	....
Paper balloons	1	*	......	......	......	......	......	......	....	....	....
Burning sulphur	1	*	......	......	......	......	......	......	....	....	....
Total Adirondacks	170	1,663	423	793	257	88	57	45	$960 00	$25 00	$400 00
CATSKILLS											
Smokers	13	176	137	27	12	......	......	......	$15 00	....	....
Locomotives	33	583	270	142	78	75	6	12	785 00	....	....
Berry pickers	1	300	300	......	......	......	......	......	....	....	....
Hunters	4	72	22	25	25	......	......	......	....	....	$10 00
Burning brush	8	662	428	164	70	......	......	......	310 00	....	10 00
Incendiary	2	138	......	130	8	......	......	......	....	....	....
Children	2	7	5	2	......	......	......	......	100 00	....	....
Burning buildings	1	150	......	25	125	......	......	......	....	....	15 00
Total Catskills	64	2,088	1,162	515	318	75	6	12	$1,210 00	....	$35 00
TOTALS											
Adirondacks	170	1,663	423	793	257	88	57	45	$960 00	$25 00	$400 00
Catskills	64	2,088	1,162	515	318	75	6	12	1,210 00	....	35 00
Grand totals	234	3,751	1,585	1,308	575	163	63	57	$2,170 00	$25 00	$435 00

* Less than one acre burned.

Forest Fire Losses, 1917, by Counties

COUNTY	Number of fires	Total acreage burned	Total expense of fighting fires	Acres private land burned			Acres State land burned			Value of standing timber destroyed	Value of logs, lumber, etc., destroyed	Value of buildings, fences, etc., destroyed
				Second growth	Brush	Waste	Second growth	Brush	Waste			
				ADIRONDACKS								
Clinton	11	53	$64 92	8	13	28	1	3	......	$45 00	....	....
Essex	40	268	951 34	144	74	25	......	13	12	620 00	$15 00	....
Franklin	25	101	321 14	3	90	7	1	......	......	65 00	....	....
Fulton	2	61	6 60	......	......	60	......	1	......	....	....	....
Hamilton	12	170	110 75	22	20	23	86	......	19	15 00	10 00	....
Herkimer	1	1	....	......	......	1	......	......	......	....	....	....
Lewis	11	259	26 30	2	212	5	......	40	......	10 00	....	$400 00
Oneida	5	74	54 25	10	64	......	......	......	......	....	....	....
Saratoga	8	102	52 20	30	67	5	......	......	......	....	....	....
St. Lawrence	18	47	283 60	3	10	21	......	......	13	5 00	....	....
Warren	37	527	471 22	201	243	82	......	......	1	200 00	....	....
Total Adirondacks	170	1,663	$2,342 32	423	793	257	88	57	45	$960 00	$25 00	$400 00
				CATSKILLS								
Delaware	22	656	$100 20	333	156	74	75	6	12	$635 00	....	....
Greene	8	36	67 00	7	13	16	......	......	......	....	....	....
Sullivan	5	226	74 60	15	56	155	......	......	......	....	....	$35 00
Ulster	29	1,170	256 01	807	290	73	......	......	......	575 00	....	....
Total Catskills	64	2,088	$497 81	1,162	515	318	75	6	12	$1,210 00	....	$35 00
				TOTALS								
Adirondacks	170	1,663	$2,342 32	423	793	257	88	57	45	$960 00	$25 00	$400 00
Catskills	64	2,088	497 81	1,162	515	318	75	6	12	1,210 00	....	35 00
Grand totals	234	3,751	$2,840 13	1,585	1,308	575	163	63	57	$2,170 00	$25 00	$435 00

of Agriculture to New York State for fire protection on the watersheds of navigable streams within the fire towns. This allotment was used to pay the salaries of observers on mountain stations.

Through the cooperation of the post-office department, rural mail carriers and star route carriers were requested to report forest fires, but so far as it has been possible to ascertain, no fires were reported by these men during 1917.

Salaries of Rangers. On account of the increased cost of living and the higher wages being paid to labor everywhere, it is becoming more and more difficult to secure first class men for the ranger force. The rangers are now receiving a minimum salary of $70 per month and a maximum of $75 is all that is allowed by the statute. There can be no logical objection to the placing of the forest rangers upon an equal footing with the game protectors as regards salary, and it is accordingly recommended that the law be amended to permit paying rangers a minimum salary of $75 per month, with promotions in salary as they may be deserved, up to a maximum, to be attained after at least five years in the service, of $1,300 per annum.

Non-Fire Towns. The law enacted in 1916, providing for better fire protection in the non-fire towns, has not been generally used. The town officials have discretionary powers, except that the supervisor must file with this Commission a list of fire wardens. Over 90 per cent of the supervisors have done so, and the Commission has endeavored to be of assistance to all such officers. The changes in organization to effectively handle fires in these towns will be gradual.

FOREST PRODUCTS

The statistics gathered by the office from the numerous manufacturers of wood cut in the State have been compiled and show a total of 863,932,860 board feet.

A comparison of the total product for 1916 with other years shows a slight increase. A careful analysis of the figures show a decrease in lumber and an increase in round wood. The shortage of wood in the market has increased the price of pulp wood, which has stimulated cutting and also putting some material into cord wood, which formerly went into lumber.

WHITE PINE BLISTER RUST

We continue to face a most serious menace to our forests and reforesting program in the white pine blister rust. This disease attacks only pine trees whose needles are in bundles of five. The only pine of this kind, native to this State, is the best and finest tree for all purposes that ever grew in the State — the white pine. If this tree cannot be saved, then resources worth millions of dollars are doomed, the future use of millious of acres of poor land is questionable, and the tree that has been expected to furnish the major part of our local timber supply will fail.

Owing to lack of investigation, it has been impossible before this time to know the distribution of the disease and plan any control work. The Legislature of 1917 enacted chapter 283 of Laws of the State and made appropriation for the work. With this authority and assistance, the work of investigation, control and eradication has been pursued the past season. The results of that work are submitted.

Summary of Results, 1916. White pine blister rust was not known to be generally prevalent in New York State until late in the summer of 1916 and further discoveries made during that year did not show that the infections found were of more than local extent. Diseased native pines were found in Essex county and imported pines were found diseased in four forest plantations which had been annually inspected for blister rust since 1909, it was found also in three plantations made with trees imported by commercial nurserymen and on imported pine stock in three commercial nurseries. The disease was located on currants and gooseberries, both wild and cultivated, in the Champlain valley, from Port Henry to the Canadian line, and over extensive areas in Columbia, Rensselaer, Washington and Saratoga counties, as well as along the western boundary of the State in the counties of Chautauqua, Erie and Niagara. Cultivated currants in several commercial nurseries and fruit tree plantations in different parts of the State were also found to be infected with the disease.

The eradication work done in New York state in 1916 consisted of the destruction of diseased currents in commercial nurseries, the removal of diseased white pine from plantations, and the establishment of an immune zone (Eradication Zone No. 1) surrounding the western boundary of the infected area in Columbia county. The object of this zone was to prevent the westward spread of the disease by the removal of all cultivated currants and wild gooseberries from the open land in a strip at least two miles wide, extending from Copake, Columbia county, along the Harlem division of the New York Central Railroad and the Boston and Albany Railroad as far as Lebanon Springs.

Plan of Work, 1917. The work to be done in 1917 was planned upon the information in regard to the disease which was then at hand.

Steps were taken to prevent the further spread of the disease as follows:

1. By re-working and extending Eradication Zone No. 1, in order to remove any cultivated bushes which had been overlooked the previous season, and also to do more thorough work in removing wild bushes and to widen the strip, in order to prevent the disease from crossing it.

2. By the establishment of an immune zone (Eradication Zone No. 2) surrounding the infections in Essex and Clinton counties. The purpose of this zone was the same as that in Columbia county.

3. By forming an eradication zone (Eradication Zone No. 3) along the Niagara river, in co-operation with the Province of Ontario, Canada, where a similar zone was established on the western side of the river. The purpose of this zone was to prevent the spread of the disease from Canada into New York state.

In addition to the formation of these eradication barriers to prevent the spread of the disease, a comprehensive plan for scouting the whole state was determined upon, so that by the end of the season of 1917 a complete knowledge of the blister rust situation in the state would be available. This scouting was to be done on pine trees early in April and continuing until July first, and then continued on the Ribes until the leaves were off the bushes.

The eradication work in Eradication Zone No. 1 was started June 1, in Eradication Zone No. 2 on May 25, and in Eradication Zone No. 3 on May 16. A local man was placed in charge of the work in each eradication zone and given authority to employ men for eradication of cultivated currants and wild currants and gooseberries in the territory which he was to cover. In addition to the eradication zones mentioned, an eradication area (Eradication Area No. 1) for controlling the disease was started in the infected pine region of Essex County. This work was begun on June 4. During the first part of this work high school boys were assigned to one foreman, and the ground was worked over according to the strip method. During the latter part of the season it was possible to secure local labor, as there were many farmers in that section who were willing to work out by the day when their farm work was completed. The work done by the local labor proved to be more satisfactory than that done by the high school boys, since the local men were able to work harder and they were more accustomed to the country, and, therefore, could accomplish better results than the boys who were not accustomed to hard work when they began. The draft did not affect the labor problem very much this year, although it will probably be felt to a greater extent next year, especially if the work is started early in the season.

The second area (Eradication Area No. 2) was started September 1, in the vicinity of Cadyville, N. Y. No diseased pines have been found in this section, although the disease was quite plentiful on currants and gooseberries throughout that region. Local men were employed for this work.

The third eradication area (Eradication Area No. 3) was started in Washington county near West Fort Ann, N. Y. The same policy was followed there as in Clinton County, employing local help for the eradication work. No diseased pines were found there, although the disease was very abundant on currants and gooseberries.

A number of other small eradication areas were made in connection. with the protection of plantations in different parts of the state.

Scouting. During April, three men were employed scouting on pines. Twelve scouts were employed during the month of May, scouting native pines throughout the Champlain Valley and making inspections of planted pines throughout the state. The number of scouts on this work during the month of June was increased to nineteen. During the month of July, fourteen men were employed on scouting for Ribes. The scouting was done first in places where the disease had occurred the previous year and was gradually continued until the entire State was covered. The scouting in the vicinity of diseased areas was more intensive than in other places, except in instances where new centers of the disease were found. This same policy of scouting was continued throughout August, September and October. Sixteen scouts were employed during August, fourteen during September and seven during October. The result of scouting gives us a good idea of the location of diseased areas.

There is a general infection of currants and gooseberry bushes throughout practically all of Clinton county; in Franklin county south of the D. & H. R. R. and east of N. Y. C. R. R., as far south as Saranac lake; in Essex county over all of the northern portion and the eastern half; in Warren county, east of the Hudson river; in Washington county over nearly all; in Saratoga county over a wide belt extending east and west across the middle part and wide enough to include half of the county; in Fulton county in the easterly half. A narrow belt exists along the east end of the State, which was included in Eradication Zone No. 1. Large areas were found in the southwestern part of Columbia county and the northwesterly part of Niagara county. Local infections have been found on currants and gooseberries at Dunkirk, Fredonia and Silver creek in Chautauqua county; Hobart and Arkville in Delaware county; Millerton and Bangal in Dutchess county; Constable and Malone in Franklin county; Batavia and Rochester in Monroe county; Glen Cove in Nassau county; Lockport in Niagara county; Clinton and Forestport in Oneida county; adjoining the Indian Reservation in Onondaga county; Geneva in Ontario county; near Phoenix in Oswego county; Cooperstown in Otsego county; Sharon Springs and Schoharie in Schoharie county; Huntington, Bellport and Brookhaven in Suffolk county; near Ithaca in Tompkins county; and at Wallkill in Ulster county.

Infections on pine have been found over a large area in the vicinity of Lewis in Essex county. There are infections at Anthony's Nose in Washington county and smaller infections at Harkness in Clinton county; North Hudson in Essex county;

Gloversville in Fulton county; Forestport in Oneida county; Geneva in Ontario county; Westbury in Suffolk county; and at Paul Smiths and Saranac Lake in Franklin county.

Control. The control work, which was carried on in addition to the eradication zones and eradication areas already mentioned, consisted of the eradication of currants and gooseberries in the vicinity of the following plantations and nurseries: Finch, Pruyn plantation, North Hudson; State nursery at Comstock; plantation of the Clark Estate, Cooperstown; planation of Great Bear Spring Water Company, Fulton; Paragon Plaster Company, Forestport; A. G. Lewis plantation, Geneva; State nursery and plantation, Goldsmith; and plantation of the Gloversville Waterworks. Diseased currants were destroyed in some places where isolated infections were found, and diseased black currants have been destroyed in several nurseries.

Eradication. Experiments in eradication of currants and gooseberries have been carried out on areas in Clinton county and in Essex county. The white pine is of great importance in these localities. The purpose of this work was to determine the cost of eradication and its practicability. The Essex county area covered about ten thousand acres, all of which have been worked over and cleaned up at an average cost of $1.12 per acre. The Clinton county area embraced about four thousand acres and the work was done at an average cost of twenty-three cents per acre. The difference in expense is due largely to the character of the land.

Co-operation. The work has been carried on in co-operation with the U. S. Bureau of Plant Industry. They have given much technical assistance, kept us advised of work in other states, and have contributed $21,629.50, which has been used to pay wages of employees.

Future Control Methods. In view of the further information which has been brought forth during the work of the past season, it seems advisable to change the general plan of blister rust control, as it has been practiced during the past season, and place it on a somewhat different basis. It has already been shown that the disease is now present throughout the valuable pine districts of the State. It is, therefore, not necessary to conduct any futher extensive scouting, except to make sure that the disease is not present in localities where it has not yet appeared.

In order to gain lasting results from the eradication work, it seems most advisable to put it entirely on a co-operative basis with the individual land owners or the majority of the land owners in a given community. The work will not be successful if it is done only once, as wild currants and gooseberries will be sure to appear again in subsequent years, after they have been eradicated. It is comparatively an easy matter to remove cultivated ribes and place a quarantine against further planting, and this could be done by the State without the aid of individual land owners. The eradication of wild currants and gooseberries, however, is an entirely different proposition and a very expensive one, if it is carried on over a long period of years. It seems, therefore, that in order to obtain satisfactory results the work should be confined to areas where the land owners are willing to co-operate and to see to it that the work is not allowed to lapse after a year or two. From the experience gained this summer in Essex county, it seems that such a plan as this should work out very satisfactorily. It will probably be possible to interest communities or townships in the same way. This plan will naturally cause the work to be done in localities where white pine is of the greatest value.

WAR WORK

Last summer the Superintendent of State Forests was asked by the United States Forest Service to act as listing officer for this State in raising a regiment of foresters and woodsmen to go to France. The War Department had asked the Forest Service to raise such a regiment. The necessity was emphasized by General Joffre, when the French Commission visited the United States. We gladly accepted and great assistance was given by the field force of Forest Rangers and Game Protectors. Several hundred excellent men were obtained, who joined either the Tenth Engineers (First Forestry Regiment) or the Twentieth Engineers (Second Forestry Regiment.) This task required publicity, canvassing, many interviews, and replying to a vast amount of correspondence.

A short time ago the United States Forest Service suggested that we take active steps to increase the available wood supply and encourage the use of wood as a substitute for coal.

The Assistant Superintendent of State Forests is in charge of the Wood Fuel Bureau to carry out this suggestion.

LANDS PURCHASED

Purchase of the following lands have been recommended by the commission, the purchase approved by the commissioners of the Land Office, the title approved by the Attorney General and payment made by the Comptroller:

HAMILTON COUNTY

Benson Township, lot 63, Und. ½ of West ½.	40	acres
Totten & Crossfield Purchase, Township 15, lot 112, northeasterly part	93	acres
Township 16, lot 21, North ½...............	509.10	acres

THE CUBA RESERVATION

The Cuba Reservation is in excellent condition and is returning a gross revenue of approximately $2,700 per year to the State. During the last year a caretaker has been employed to look after the property and to see that it is kept in a proper condition. After deducting the expenses of administration, the net revenue is approximately $2,100.

THE ST. LAWRENCE RESERVATION

During the last year a forest ranger has been assigned to the St. Lawrence Reservation and has done effective work in patroling and in looking after the sanitary condition of the property. The docks and pavilions have never before been in better condition, and the people who use the Reservation have shown a much better disposition to use it properly since this supervision has been instituted.

THE JOHN BROWN FARM

The John Brown Farm continues to be visited by large numbers of tourists each year, and is one of the important historic points of interest in the Forest Preserve. The property has been kept in good condition by the caretaker.

DIVISION OF WATERS

DIVISION OF WATERS

ALBERT H. PERKINS	*Division Engineer*
FRANK H. MACY	*Assistant Civil Engineer of Water Power, Water Storage and Drainage*
EDWIN S. CULLINGS	*Assistant Civil Engineer of Water Supply and Sewage*
ALEX. R. MCKIM	*Inspector of Docks and Dams*

DIVISION OF WATERS

WATER POWER DEVELOPMENT

For some time past the inventory and preliminary studies of the water powers of the State have reached a point where the vast resources of the State in this most valuable natural asset have stood fully revealed. In the face of this fact and of the overwhelming need for power at the present time, we can no longer, without serious danger of becoming economic slackers, sit with folded hands while the power of our streams runs uselessly to waste.

The Commission again recommends the placing of the power to act and the fixing of responsibility for action. It believes that the State should immediately select some of the largest and most available storage and power projects and proceed at once with their development, in accordance with the policy expressed by the Governor in his annual message to the Legislature. Additional power at Niagara, the development of the Long Sault, the construction of the Sacandaga and Portage reservoirs, present opportunities to develop power at a cost which is a fraction of the price at which it is now being sold in the vicinity of these water powers.

Steel and nitrogen compounds and the products of many chemical industries are basic necessities for winning the war. The vast resources of the State of New York in water power used in the production of these things mean more ships, more food, more explosives and more munitions, in quantities sufficient to exert great influence upon our success in the war and in the work of peace after the war.

WATER POWER AND STORAGE SURVEYS

Below is given a brief synopsis of each unit of work carried on by the State during the past year upon the various streams of the State.

Black river. As reported in the last annual report, a power survey of the Black river was made during the year 1916. A considerable amount of additional field work on this river has been done during the past year, and the office studies have been carried forward as fast as possible with our limited engineering force. It is expected that these studies will be completed in the near future and that a special report on this river will be issued.

Grass river. A complete power survey of the Grass river has been made and office studies are now under way. A profile of the river from Grass river flow to the St. Lawrence river was run, surveys were made to determine the feasibility of various storage basins, and brief surveys of all undeveloped storage sites were made. All developed powers on the river were inspected and data secured as to head in use, turbine installation and use of power. As soon as the office studies have been completed, this information will be published in a separate report.

Upper Hudson and Schroon watersheds. The opportunities offered for storage on the Hudson watershed above Hadley were pointed out in the fourth annual report of the State Water Supply Commission.

During the past season a survey has been made for the purpose of making a preliminary estimate of the cost of developing this storage. The profile of the upper Hudson was extended from Indian river to Tahawus and surveys of dam sites for power and storage were made at Tahawus, the outlet of Rich lake, Newcomb lake and Ord Falls. Profiles were also run on the Goodenow river, including detail surveys at two possible dam sites. A partial profile of the Cedar river was run, including the dam site at the outlet of Rock lake. A profile of the Boreas river from its mouth to Cheney pond was also made, together with dam site surveys at various points on the river and at Cheney and Boreas ponds.

The creation of a storage reservoir by raising the level of Schroon lake has been advocated for many years. The growing popularity and rapid development of the Schroon lake region as a summer resort has greatly increased realty values in the storage basin. With a view of estimating the feasibility of securing an equivalent amount of storage at other points on this watershed, surveys of dam sites for possible storage reservoirs were made at Olmsteadville on Minerva stream, Natural Bridge on Trout brook and Schroon falls on the Schroon river.

POWER STUDIES

St. Regis river. A survey of the power and storage possibilities on the St. Regis river was made during 1914 and 1915. This survey included a profile of the main river and east and west branches from the mouth to the headwaters, as well as detail surveys at all possible dam sites for power development and storage reservoirs. Data concerning existing power developments was collected through the courtesy of the power owners.

During the past two years studies have been made to show the benefit of storage regulation on the present power developments on the river, as well as to determine the possibilities of a further development.

The present installation on the river amounts to about 4800 horse power, which is developed on a total fall of 270 feet. In nearly all cases the present flow of the stream will run these wheels at full capacity throughout the year.

The profile of the stream shows a gross fall of 2518 feet below the dam sites of the proposed storage reservoirs. With regulation afforded by the storage reservoirs, 83,500 horse power could be economically developed on the stream. A special report on the power possibilities of this stream is being prepared.

Hudson river. During the past year office studies have been made in connection with the benefits which are to be expected from the regulation which would be afforded by the larger storage reservoir projects on the Hudson river, namely, the proposed Sacandaga and Indian Lake Reservoirs. This entailed a complete revision of previous studies, as nearly six years of actual stream flow measurements have been made available since the last study was made. It is proposed to make the principal results of this study the subject of a special report.

Ausable river. A complete survey and investigation of the power possibilities of the Ausable river was made in 1915 and office studies were made in 1916-1917. The results of this study will be made the subject of a special report.

UPPER HUDSON RIVER REGULATION

Several hearings have been held during the past year upon the petition of the Glens Falls Chamber of Commerce, praying for the organzation of the Upper Hudson River Regulating District, in accordance with the provisions of chapter 662 of the Laws of 1915. At a hearing held December 12, 1917, the petition was withdrawn and the proceeding was closed.

DRAINAGE

Hearings were held during the past year upon the petitions of certain owners of swamp lands near Sodus and Wayne Center, Wayne county. At these hearings the reports and estimates of cost made by the commission were presented. In the case of the Sodus project, the owners of the land affected were about equally divided in favor of and against proceeding with the owrk. At Wayne Center only a small percentage were willing to proceed. The commission withheld its decision in both cases.

A petition was received this year from certain owners of lands in the towns of Pendleton and Lockport, Niagara county, setting forth the necessity of drainage of said lands. Upon receipt of this petition the Commission ordered that a survey be made and preliminary plans and estimates prepared. The survey has been completed and maps and plans are in the course of preparation.

CANASERAGA CREEK IMPROVEMENT

The work of maintenance, consisting chiefly of the extension of pile and brush bank protection as begun in 1916, was continued during the 1917 season. The experience gathered from the 1916 work indicated that it would be advisable to purchase and operate our own pile driver plant. The commission accordingly purchased a pile driver and constructed about one-third of a mile of this protection work during the past season at a considerable saving over last year's contract prices.

From an agricultural viewpoint, the past season was especially discouraging to the land owners in the district. April and May were cold months, the spring in general being particularly unfavorable for winter grains and meadows; garden and early sown crops were slow, and in many cases replanting was necessary. The months of June and July were excessively wet and planting and cultivating proceeded very slowly. August was normal and favorable. September was one of the coolest Septembers on record, but conditions were generally favorable from an agricultural standpoint. October was also an exceedingly cold month and the rainfall was extremely heavy, and severe rains the last week resulted in the highest floods recorded at this season of the year in this section of the State. In spite of the unfavorable season and rainfall conditions, the improved channels provided a much quicker run-off of flood waters and a vast improvement in conditions was apparent.

In the matter of the certiorari proceeding to review the commission's final determination of benefits accruing to the lands and properties in the district, the Hon. Herbert A. Hemmingway of Corning was appointed referee by the Supreme Court. Proceedings in the matter are now pending.

INSPECTION AND SUPERVISION OF HYDRAULIC STRUCTURES

Jurisdiction over the docks and dams of the State is conferred upon the Conservation Commission by section 22 of article 3 of the Conservation Law. Under this statute, before any structure for impounding water, or any dock, pier, wharf or other structure used as a landing place, with the exceptions stated below, shall be erected or reconstructed, plans and specifications therefor shall be submitted to and approved by the Conservation Commission. Authority is also given the commission to serve an order to remove, repair or reconstruct any such existing structure if, in its judgment, after a hearing, such action is necessary for the public safety. The law includes all the hereinafter mentioned structures within the State, except such a structure forms a part of the canal system; or except in the case of a dam where the area draining into the pond formed thereby does not exceed one square mile, unless the dam is more than ten feet in height above the natural bed of the stream at any point, or less the quantity of water which the dam impounds exceeds one million gallons; or except a dock, pier, wharf or other structure under the jurisdiction of the department of docks, if any, in a city of the first class.

During the fiscal year ending June 30, 1916, the Commissioner, upon the recommendation of the Division of Waters, has approved proposed plants for twenty-seven dams and five docks.

The location and inspection of existing structures was continued by six summer employees under the direction of the Inspector of Docks and Dams. The assistants locate the docks and the dams, and report the condition and certain measurements and data required. The inspector personally inspects structures reported as unsafe and also new structures. During the past year he has made one hundred and sixty-three inspections.

WATER SUPPLY AND SEWAGE

The prevailing high prices for labor and material and the absorption of investment funds by the federal government in the liberty loans have caused considerable reduction in waterworks construction during the past year. The most noticeable activity in this line has been the purchase of existing privately owned waterworks systems by several municipalities. This tendency appears to be due to the low rate of profit earned by these companies, and to the difficulty experienced by all public service corporations in obtaining funds for renewals and extensions.

An increasingly large number of sewerage applications have been submitted for approval. Most of these applications involve the construction of works for the sanitary disposal of sewage. This appears to indicate a growing realization of the necessity for adequate treatment of municipal wastes in order to prevent the pollution of public waters. Among these applications are a number involving the treatment of wastes from tanneries, acid factories and other manufacturing establishments. This matter is being given detailed study in order to determine the degree of purification necessary to safeguard public water supplies and to prevent the destruction of fish life.

ENGINEERING ASSISTANCE

St. Lawrence Reservation. Plans and specifications for a new dock on the State reservation at Cedar Point were prepared by this division and contract for the work was let September 13, 1917. This work is now under construction, but, owing to the difficulty in obtaining labor and to unfavorable weather, the contractor was obliged to discontinue work in December. Time for completion of this dock has been extended to May 15, 1918.

Fish Hatchery at Dunkirk. General plans for a new fish hatchery on Point Gratiot, in the city of Dunkirk, have been prepared by this division in coo-peration with the State architect. Contracts for its construction were let July 20, 1917, and the building is now being constructed under supervision of the State architect. Although the contractors have experienced great difficulty in securing labor, it is hoped that the building will be ready for operation during the spring of 1918.

AMENDMENTS TO CONSERVATION LAW RECOMMENDED

Supervision of hydraulic structures. Attention is called to the provision of article 22 of section 3 of the Conservation Law relating to "structures for impounding water." Under the present law the commission has no jurisdiction over structures which, while not erected for that purpose, do nevertheless impound water. This results in considerable danger to life and property. The desirability of placing such structures under the jurisdiction of the commission was brought out during the past season. As the result of a severe rain-storm, two small mill dams failed, causing the loss of two lives and considerable property damage.

In the course of its investigations, the attention of the commission was called to the fact that an insufficient stream opening through a railroad embankment above the upper dam had become clogged with driftwood, and that water had been impounded above the embankment, causing its failure. The resulting flood wave, together with the debris accumulated behind the embankment, caused the washing out of the embankment and the failure of the dams, with the above mentioned results.

In order that the commission may have sufficient authority to remedy conditions similar to this, it is respectfully recommended that the law be so amended as to apply to all structures which in any way impound the natural flow of the streams over which the commission has jurisdiction under this section.

Drainage Law. Section 483 of article 7 of the Conservation Law, known as the Drainage Law, provides that if the final determination of the commission in the matter of the formation of a drainage district is that the proposed improvement shall be proceeded with, it shall enter a final order, which order shall be approved by the governor.

A further reading of this article indicates that further actions of the commission are to be approved by the governor.

In reference to the power of the commission to make minor changes in the final plans and order, the statute now reads that "the commission may make such changes in such final order as approved by such act of the *Legislature.*" As this is manifestly an error in the original intent of the law, it is respectfully recommended that the same be amended.

Advertising. In articles VII and VIII of the Conservation Law, relating respectively to River Improvement and Drainage, provision has been made for advertising notices of hearings and requests for bids and proposals. In some cases the law states that said notices shall be published for two successive weeks and in others once a week for two successive weeks.

In order to comply strictly with the law the commission has felt it necessary to make "daily" publication for two successive weeks, unless otherwise provided for, which has resulted in large expenditures for this purpose. It is respectfully recommended that the law be amended to specify the number of times such publication shall be required.

DIVISION OF SARATOGA SPRINGS

DIVISION OF SARATOGA SPRINGS

JOHN G. JONES	*Superintendent*
C. B. ELMORE	*Secretary*
HERBERT ANT	*Chemist*

DIVISION OF SARATOGA SPRINGS

REVENUE PRODUCING DEPARTMENTS MAKE A PROFIT

Since the State Reservation at Saratoga Springs was turned over to the Conservation Commission on April 26, 1916, every revenue producing division has paid a profit over and above its cost of operation. When it is considered that during all of this time the Reservation has been undergoing extensive reorganization in machinery and other equipment, that extensive repairs had to be made, and that a large amount of experimental work had to be done to devise effective methods for bottling water satisfactorily in large quantities, a net profit is a matter for much satisfaction.

The accompanying statement of receipts and disbursements from April 26, 1916, to the close of the fiscal year on June 30, 1917, shows that the Spring Water Division paid a net profit of $7,714.59; the Bath House Division a net profit of $1,015.64, and the Miscellaneous Division a net profit of $10,557.37, or a total profit for all income producing divisions of $19,287.60.

The total expense for conducting the departments not productive of income, exclusive of extraordinary expenditures, was $38,933.61.

INCREASES FOR THE YEAR

During the last fiscal year the total amount paid into the State Treasury by the Division of Saratoga Springs was $59,518.06. The largest amount ever turned into the State Treasury prior to this administration was $14,891.22. It is thus apparent that the business of the reservation is growing at a most satisfactory rate. The effort of the commission has been so to organize the business of the reservation and so to develop the physical properties that a steady and healthy growth may be looked for continuously.

The amount of business done in the season of 1916 was greater than in any previous year, and that of 1917, following the close of the fiscal year, was similarly greater than that of 1916. The Commission has no reason to doubt that the season of 1918 will show a corresponding advance.

To gain a knowledge of the increased amount of business transacted at Saratoga Springs, both in the sales of mineral water, and in the giving of baths and other treatments at the various bath houses, the following comparisons are submitted:

The total number of patients treated at the bath houses operated by the State in the calendar year 1916 was 17,081, while the total treatments for 1917 were 21,959, showing an increase of 4,878, or 28½ per cent.

The accompanying table gives a tabulated comparison of the receipts for the calendar years 1916 and 1917, showing an increase for 1917 of nearly $14,000.

It must be taken into consideration that no advertising of any moment has been done by the Division of Saratoga Springs, because of the reorganization and other work that had to precede a selling campaign. With a proper amount of newspaper and other advertising, the Commission may confidently expect to double or triple these figures, more particularly those relating to the sales of bottled mineral waters.

Comparison of Receipts for Calendar Years 1916 and 1917

	1916	1917
Mineral water sales	*$26,801 74	$34,402 38
Bath house receipts	16,128 30	19,803 03
Gas royalties	3,619 06	3,153 90
Rentals	1,546 16	2,041 00
Miscellaneous receipts	1,267 40	3,939 35
	$49,362 66	$63,339 69
Increase for 1917		$13,977 03

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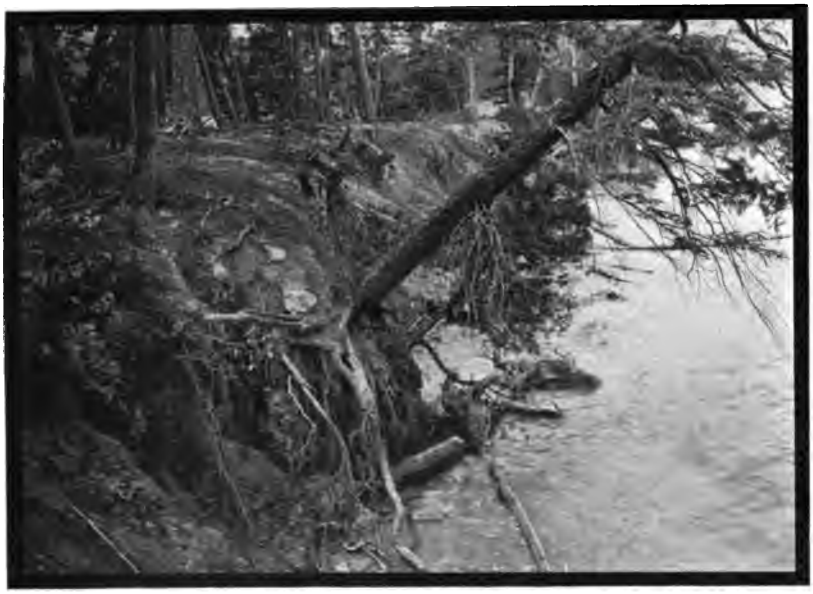
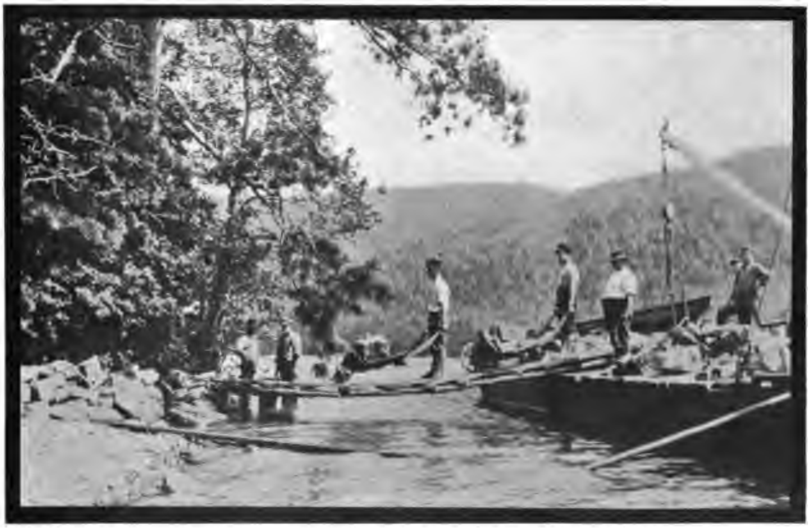
*Gross receipts from mineral water sales for January, February, and March, 1916, not included, as this department was then being operated by Hathorn & Company, under lease from the former Reservation Commission.



Erosion is rapidly destroying the most beautiful of the Lake George Islands.



Simple rock retaining walls provide effective and permanent protection.

The State's abandoned canals offer unlimited opportunity for the propagation of food fishes.

Bottling Difficulties Overcome

One of the most important accomplishments of the Commission during the year and a half that it has had control of the State Reservation at Saratoga Springs has been the development of methods and the installation of machinery to make possible the bottling of Saratoga waters in their natural state and with entire assurance that no chemical changes will result in the bottle.

The Conservation Commission at the very start adopted the policy of bottling the waters in their natural condition. This means that the water must go into the bottle as it comes from the earth, with nothing added to or taken from it, and that it must stand up indefinitely in this natural condition. Great difficulty has arisen in accomplishing this, because of the fact that the most minute quantity of air in the bottle will bring about chemical reactions with the constituents of the water and cause a precipitation of much of the mineral matter in solution. While the result is not in the least harmful, it nevertheless entirely destroys the appearance and palatability of the water.

It is easy enough to bottle a mineral water of the Saratoga type and have it retain all of its minerals in solution, provided citric acid is added. The water may also be bottled easily if it is exposed to the air in tanks until the precipitation has occurred. This means, however, that it loses a large part of its mineral content and must be recarbonated artifically. It is also easy enough to procure a good ground water, free from the troublesome minerals, add certain soluble salts, and then carbonate and bottle the water.

During the many years preceding State ownership of the Saratoga Springs, and even subsequent to their operation by the State, numerous bottled waters from Saratoga, put up in accordance with one of the above methods, were to be found on the market. At first little was demanded, either by the National government or by the consumer, in the way of sanitation or freedom from adulteration. Under present conditions, however, a clean, sterile, unadulterated product is required, and adulteration by citric acid, or in any other way, must be noted on the label. In other words, if waters are to be bottled and sold as natural waters, they must be in fact natural waters. It is of course particularly important that the State of New York scrupulously observe every requirement of cleanliness, sanitation and unchanged natural condition.

It was discovered at the very outset of the Commission's investigation that the manufacturers of bottling machinery had never before had to meet the conditions imposed by the Commission's policy. The one bottler who had marketed an absolutely natural Saratoga water had put out only 75 cases of 2 dozen pints in a ten hour day. Filling, crowning and labeling by hand were his only methods. His equipment provided for completely filling the bottles with carbon dioxide gas before the water was introduced. As the water rose in the bottle, it pushed out the carbon dioxide gas, so that no air ever came in contact with the water. The bottle was then quickly crowned before air could displace the small amount of carbon dioxide gas left in the neck. It was discovered that under actual working conditions the operator became very much less efficient after a very short period, so that the bottles were not thoroughly filled with carbonic acid gas. This meant contamination of the water with a small amount of air, and caused precipitation and other chemical changes within a few hours after bottling.

In addition to the inefficiency of this method, the water put up was very expensive and the output did not begin to supply the demand. The Commission has felt that under State ownership it is necessary that the waters, which are public property, be put into every one's hands at the smallest possible cost. This can be accomplished only by the use of automatic machinery, capable of handling large volumes of water with absolute freedom from air contamination.

The Commission, with the cooperation of the manufacturers of bottling machinery, has made exhaustive experiments to solve the problems presented. Machines capable of being remodeled to meet the special conditions imposed, were installed, the necessary changes were made in them, and comparative tests obtained. During this experimental period very little water that was marketable was produced, the amount varying from twenty-five to fifty per cent of the entire output.

The experiments finally resulted in the designing and building of a machine that automatically displaces the air in the bottles with carbon dioxide gas and feeds them to the filling machine. This equipment has resulted in increasing the capacity of the plant at the present time to one hundred cases of two dozen pints per hour, or more than thirteen times the capacity which the bottling establishment had a year and a half ago. Difficulties in bottling Saratoga waters in their natural state have now been eliminated, and by the installation of additional machinery of the same type, the capacity of the bottling plant can be increased to any extent. Had these chemical and mechanical problems not been solved, the bottling of Saratoga waters in large quantities, as they come from the ground, would have been impossible.

PARKS AND DRIVES

The amount of work done in 1916 on parks and drives of the State reservation to bring them back to presentable condition made it a much easier matter to put these walks and drives in condition for the 1917 season. Because of the lack of appropriation, it was not possible to make proposed replacements of the foot and road bridges in Geyser park. These bridges are in a very bad state of repair, because of rotting of timbers. If the roads of Geyser park are to be used during the season of 1918, the bridges must all be repaired, and most of them must be replaced, to insure the safety of visitors.

As practically all the available land on the Reservation had been reforested during previous years, the reforestation work in 1917 consisted only in replacing some young trees that had died and in the planting of ornamental shrubs and trees about the Lincoln bath house, the Saratoga bath house and in other places on the reservation.

The work on the grounds at the Lincoln bath house was finished in the spring of 1917, the fountain having been reconstructed and the roads, paths and lawns put into the best of condition. Considerable work was done in Geyser park about the Hathorn No. 2 and Hathorn No. 3 springs, the unsightly ditch at the side of the State road having been completely filled and graded and the uneven contour of the land changed to a general even slope. Paths and walks, as well as parking place for automobiles, have been provided. Re-surfacing of the Avenue of Pines with new gravel was begun at the southern end, and considerable grading was done along this road to put it in better shape for the large amount of traffic which now seeks this short cut between South Broadway and the Geyser district.

BUILDINGS

The large, unsightly buildings over Hathorn No. 2 and Coesa springs, which were not in good condition, have been torn down and replaced with small pump houses of a design which fits into the general scheme of buildings on the State Reservation. The pump houses over Congress No. 2, Minnonebe and Polaris springs were shingled and painted to fit into this design. An ornamental pavilion has been erected over Hathorn No. 3 spring, which, in conjunction with the landscape work done about this spring, makes it one of the most attractive spots on the reservation.

The Formel building, in the Vale of Springs, which has been used only for storage purposes, is now being torn down to make way for a landscape gardening scheme.

An addition to the Ferndell bottling works, provided for by the last Legislature, is now under way, but, because of the increased cost of construction, an additional appropriation to complete this building will be necessary.

The ramshackle buildings next to the Saratoga baths have been removed and a small well kept lawn now affords a better view of the bath house.

The interior of the Saratoga bath house was entirely redecorated during the winter of 1917 and the bath departments are now finished throughout in white enamel, making this bath house a very bright and attractive place.

The Commission will not operate the High Rock bath house during another season. This decision has been reached because the building is old and dilapidated and a discredit to the State of New York; because the tubs, the plumbing, and the heating system would have to be renewed at a cost of at least ten thousand dollars; and because it has been found impossible to supply enough mineral water for the needs of the past two years at this bath house without seriously affecting the flow of the Emperor spring. Additional reasons for discontinuing its use are lack of proper resting room facilities, and its location in a very undesirable part of town, with the Boston and Maine railroad directly back of it, and coal pockets and a planing mill very near.

A number of improvements were made to the drink hall at the Hathorn building, among them being extra facilities for serving the waters hot.

WELLS AND SPRINGS

The care and maintenance of the various mineral wells and springs has gone forward constantly. The tubings in the Congress, Geyser, Congress No. 2, Smith and Island wells have been taken out of the wells, examined and replaced with new where necessary.

The wells whose waters are bottled, and also a few others, are tubed with the best electrolytic copper that can be purchased, while all the other wells are tubed with wrought iron or copper steel. It has been the experience of every wellman in Saratoga that ordinary steel pipe will not endure the severe action of the carbonated mineral waters. The use of wrought iron pipe for this purpose accordingly became universal, and when the State took possession every well was tubed with this metal. It was observed that while wrought iron was much more serviceable than steel, still the maximum period of satisfactory service was four years, and in certain wells as low as two years. Some other metal that would better withstand the action of the water was needed. Evidently the former Reservation Commissioners acted on this belief when they ordered the tubing of several wells with pure electrolytic copper. While we have found that copper withstands the action of the mineral waters much better than iron or steel, we have nevertheless ascertained that a certain disintegration of the copper takes place, forming chemical compounds which are not beneficial to the waters. With this fact in mind, several wells have been retubed with copper steel pipe and one pipe line of more than one-half mile in length has been laid. After twelve months' test under working conditions, this pipe was found to be in excellent condition.

In order that we might obtain some information as to the comparative values of copper pipe and copper steel pipe, a length of each was immersed for one month in the strongest sulphur water on the reservation. The copper steel pipe showed no effect from this test, while the copper pipe was covered inside and out with a black deposit which, upon analysis, proved to be mostly sulphide of copper. Wherever copper has been removed from a well for the purpose of replacing a seal, the pipe has always been coated with the same black deposit, even with waters containing but little sulphur.

There are now ten wells tubed with a total of over 2400 feet of copper, and it seems advisable to pull each one of these wells and retube them with copper steel pipe. The sale of the copper at its present high prices will more than cover the expense involved.

The arrangements for serving water at the Congress Spring were improved by the addition of a large fountain with three spouts, thus allowing several persons to be served at the same time. This new arrangement was in constant use throughout the season of 1917.

STORAGE SYSTEM

The storage system for mineral waters for the bath houses was completed in 1917 and was in use throughout the season. By this system the excellent water from the Lincoln tract was conveyed both to the Lincoln bath house and to the Saratoga bath house, with very satisfactory results.

BOTTLING PLANTS

The task of completing and adjusting equipment at the mineral water bottling plant in the Geyer building has gone forward throughout the year without interruption. The labeler, filler, crowner and soaker have been so adjusted as to give the maximum of efficiency. An additional glass lined storage pressure tank has been installed in order to increase the overnight storage capacity from the various springs.

The present Geyser building is so old, and has been so completely out of repair for a long time, that it is not in any way suitable for housing such excellent equipment as is now in place. In view, however, of the extremely high cost of construction at the present time, the Commission does not contemplate putting up a new building until some future date, when construction costs may be more within reason.

A new rinsing and sterilizing unit will soon be put in place, which will make the plant completely automatic from end to end, will do away with a large amount of labor cost, and will insure bright, clean bottles.

FERNDELL PLANT

The success of bottling the mineral waters with a system entirely free from air has led to the conclusion that it is wise to bottle the water from the Ferndell spring in the same manner. With this in view, driven test wells have been sunk near the Ferndell plant and the same water secured. With several large driven wells, we will be able to pump directly from the well into the bottle without exposure either to light or air. The capacity of this plant has been increased from the old capacity of 80 5-gallon demijohns, so that it will now be possible to bottle two carloads of water per day.

This plant is being enlarged by the addition of a storehouse and boiler room in the rear of the present building. When this is completed, the machinery lay-out will be somewhat rearranged to give better efficiency and larger capacity. The increased storage room will work to advantage, in that a larger amount of supplies and more bottled water may be stored in it, thus making it possible to have always on hand a reserve supply of this water.

EXPERIMENTAL WELL ON THE SMITH PROPERTY

During the summer and fall the bore known as the Smith well was increased in depth from 420 to 635 feet. The well was then explored from the bottom to the top and chemical tests made upon the water from each stratum. This was accomplished by inserting a piece of perforated pipe 20 feet in length into the well, between two rubber seals, so that the lower seal rested within a foot of bottom, with the upper seal necessarily 20 feet higher. The seals were then raised 20 feet at a time, up to 103 feet, which marks the lower end of the six-inch casing. After pumping the water from each twenty feet for a period of about twelve hours, samples were taken and tested. It was found that in all the strata between 554 feet and 594 feet the water was similar to the present Hathorn No. 3, with a chlorine content of 6000 parts per million and an alkalinity of 3550. Between 535 feet and 555 feet a spouting vein was encountered, which contained 4600 parts of chlorine and 3650 parts of alkalinity. The same held true up to 420 feet. The portion of the well above 420 feet gave the same results as the year previous, that is, a very powerful gas and water vein between 350 feet and 370 feet, with a very high alkaline bicarbonate water between 164 feet and 307 feet, and a strong salt vein at the very top.

Every effort was made to obtain a constant flow of the alkaline bicarbonate water, but without success. The seals were placed so as to take water between 164 feet and 307 feet, excluding the stronger brine veins above and below. For the first hours of pumping the alkaline water was obtained, but as soon as the pump began to draw directly on the veins, the stronger veins from below would break through and begin to spout through the pump. It was then thought advisable to draw the seals closer together, thus removing both upper and lower seal further from the strong salt veins. Accordingly the seals were placed at 104 feet and 206 feet and pumping began. Again the well began to spout and the character of the water was changed. It is evident that the powerful gas veins from below have broken through somewhere in the rock itself and in a place where it is impossible to exclude them with our seals.

It might be possible to obtain this highly desirable water by drilling into the shales, but not through them.

DRINK HALL AND BATH HOUSE

The need for a new and adequate Drink Hall and a thoroughly modern Bath House became increasingly acute as the last season at Saratoga reached its climax. In the last annual report this need was emphasized, and the Commission wishes to repeat again this year that it is important to meet it as soon as construction can be begun consistently. It is recognized, however, that this is not a time to seriously advocate such an extensive building program for Saratoga as a Drink Hall and Bath House would entail. Prices of material are very high and labor is almost unobtainable. Accordingly, while realizing that this complete program for Saratoga must be deferred until more favorable conditions have developed, the Commission desires to reaffirm the need and to state that it is absolutely fundamental in the ultimate development of the State Reservation.

DIVISION OF SARATOGA SPRINGS

STATEMENT OF OPERATING EXPENSES AND PROFITS
APRIL 26, 1916 TO JUNE 30, 1917

INCOME-PRODUCING DEPARTMENTS

Spring Water Division:

	Dr.	Cr.
Ferndell		
Fuel, light, power and water....	$317 34	
Supplies.....................	11,980 14	
Wages.......................	976 38	
Repairs......................	153 09	
Cash allowances	59 81	
Sales........................		$15,656 97
Mineral water		
Fuel, light, power and water....	$575 55	
Supplies.....................	8,978 67	
Wages.......................	2,092 75	
Repairs	287 79	
Cash allowances..............	270 38	
Depreciation.................	121 00	
Sales		$30,351 16
Drink Hall		
Wages.......................	$2,943 11	
Supplies.....................	456 79	
Repairs......................	263 91	
Admissions and Sales..........		$7,963 15
Trucks and Warehouse		
Wages.......................	$3,529 76	
Supplies.....................	3,621 67	
Repairs......................	408 99	
Selling and General		
Fuel, light, power and water....	831 30	
Supplies.....................	193 20	
Salaries.....................	2,807 24	
Printing.....................	198 44	
Communication, freight and express.	1,005 79	

Commissions and agency expenses	$2,261 05	
Discounts.	331 71	
Advertising	1,296 74	
Merchandise account	294 09	
	$46,256 69	$53,971 28
Profit, Spring Water Division	7,714 59	
Bath House Division:		
High Rock Baths		
Fuel, light, power and water	$224 93	
Supplies.	34 70	
Wages.	1,190 09	
Repairs.	737 31	
Receipts		$2,655 00
Lincoln Baths		
Fuel, light, power and water	$973 87	
Supplies.	172 70	
Repairs.	911 51	
Wages.	2,334 69	
Laundry.	402 98	
Receipts		5,689 35
Saratoga Baths		
Fuel, light, power and water	$2,513 35	
Supplies	469 06	
Repairs.	1,088 95	
Wages.	5,565 01	
Laundry.	311 11	
Receipts		9,677 55
Mineral Water Supply Plant		
Fuel, light, power and water	$76 00	
	$17,006 26	$18,021 90
Profit, Bath House Division	1,015 64	....

Miscellaneous Division:

Gas plant	$576 82	$5,319 98
Free service		
Wages	1,095 98	
Cost of cups	1,121 00	....
Miscellaneous supplies	12 71	....
Cup sales	....	2,601 03
Patterson building	165 56	731 50
Woodcraftman building	....	1,429 16
Crippen buildings	....	168 50
Smith house	....	90 00
Lincoln house	....	24 00
Miscellaneous receipts and expenses.	535 95	3,672 56
Interest (Adirondack Trust Co)	....	28 66
	$3,508 02	$14,065 39
Profit, Miscellaneous Division	10,557 37	....

Summary of profits, Income-producing Divisions:

Spring water division	$7,714 59
Bath house division	1,015 64
Miscellaneous division	10,557 37
Total Profits	$19,287 60

DEPARTMENTS NOT PRODUCTIVE OF INCOME

Administrative:	Dr.
Superintendent's Office Salaries	
Superintendent	$5,833 24
Secretary	2,100 00
Stenographer and bookkeeper	1,150 00
Laborers	641 22
Engineer's Office Salaries	
Engineer	3,500 00
Laborer	582 80
Laboratory Salaries	
Chemist	2,100 00
Laborer	166 00

Salaries and Cups for Albany Office		
Stenographer	116 67	
Assistant to Chief of Bureau of Publication	1,500 00	
Stenographer	1,800 00	
Stenographer	1,050 00	
Stenographer	50 00	
Stenographer	30 00	
Cups furnished	53 94	
Printing and advertising	2,693 34	
Traveling expenses	416 01	
Communication	728 07	
		$24.511 37
General Maintenance:		
Fuel, light, power and water	$1,053 41	
Parks and roads		
Park superintendent	1,158 74	
Wages (laborers)	4,611 60	
Supplies	868 69	
General supplies		
Superintendent's office	575 64	
Laboratory	133 38	
Engineer department	372 69	
Photo materials	58 25	
Toilet and cleaning supplies	96 39	
Automobile supplies	148 65	
Undistributed	194 37	
General repairs		
Superintendent's office	268 65	
Engineer department	699 82	
Laboratory	9 05	
Heating system	148 64	
Storeroom	37 27	
Well crew expense	3,565 81	
Congress spring expense	247 03	
Maintenance of teams	174 17	
		$14,422 25
Total Administrative and General Maintenance Cost		$38,933 62

Extraordinary Expenses:

Spring Water Division:		
Labor cleaning, repairing and straightening up about drink hall and bottling plants	$430 13	
Mechanics and material to put Geyser plant in shape to run economically and safely	440 53	
Same for drink hall	878 85	
Same for Ferndell plant	256 13	
Bath House Division:		
Putting Saratoga Baths in shape.	2,828 92	
Putting Lincoln Baths in shape	1,768 43	
Putting High Rock Baths in shape	84 85	
General Division:		
Salaries paid while employee was on military service	404 09	
State Engineer for surveys	122 00	
Land maps and frames (Albany and Saratoga offices)	11 25	
Stenographic report of trial of case of Saratoga State Waters Corporation v. State of N. Y.	30 23	
		$7,255 41
Experimental Work:		
Fuel, light and power	$204 09	
Personal service	3,431 48	
Supplies	3,069 53	
Equipment	35 00	
		6,740 10
Bills paid for former Reservation Commission		12,496 18
Depreciation on drilling machine (inventoried at $2,000, sold at $1,400)		600 00
Total of Extraordinary Expenses		$27,091 69

SUMMARY OF LEGISLATIVE RECOMMENDATIONS

SUMMARY OF LEGISLATIVE RECOMMENDATIONS

A summary follows of the more important recommendations requiring legislative action. Certain of these recommendations are not discussed in the body of this report, because they were fully covered in the report of a year ago, but have not yet been enacted into law. Other minor recommendations are suggested in the body of the report, or will be made to the legislature at proper times.

DIVISION OF FISH AND GAME

It is recommended that the law regarding rating of game protectors be changed to provide that all men making the first grade shall receive an increase of $100 in their annual salary, and that those in the second grade shall receive a $50 increase.

The deer season should be shortened by cutting off the first two weeks in October, when the leaves are still on the trees, in order to minimize the accidental shooting of does and to increase the safety of hunters. The number of deer allowed to each hunter should be reduced to one buck only and every hunter should be required to report his deer to the Commission.

Jurisdiction of the Conservation Commission should be extended to all of the State's tidal waters, and laws should be passed placing size limits and closed seasons on certain fish and giving the Commission regulatory power over nets.

Hatchery employees should be placed upon a monthly salary basis, instead of the present per diem basis, and provision should be made for promotion and increased salary as a result of efficiency in fish culture work.

Provision should be made for the establishment of a marine fish hatchery for the propagation of those food fishes of the sea that will respond to artificial propagation, in order that their numbers may be increased in New York State waters.

Provision should be made for utilizing portions of the old Erie canal for the production of food fishes on a large scale.

The closed season on black bass should be extended to July 1st, in order to more nearly cover their entire spawning season.

Legislation should be enacted making fish planting in both public and private waters subject to regulation and control by the Commission.

The Commission should be empowered to sell fish at cost for stocking private waters and to furnish without charge sufficient fish for the initial stocking of farm fish ponds.

Control by the Commission of the fisheries of the Hudson river should be extended to its mouth, in order that migratory fishes that spawn in its upper waters may have proper protection in their annual migrations.

An amendment should be made to section 182, subdivision 5, of the Private Posting Law, so that the owners of fishing rights shall not be entitled to exemplary damages unless they annually stock the portions of streams posted by them.

The weight limit of one and three-quarters pounds for white fish, which now applies universally, should be changed to provide for a limit of twelve inches in length for the Adirondack lakes.

When found in waters which are being stocked with trout, the black bass should not be protected during the spawning season.

DIVISION OF LANDS AND FORESTS

Provision should be made for continuing the work of protecting the shore lines of Lake George Islands by the appropriation of $10,000, which will substantially complete the work that is of immediate necessity.

Provision for steel towers on a number of additional mountain stations should be made in the interest of more effective fire protection.

Provision should be made for placing forest rangers upon an equal footing with game protectors as regards salary, and for increases in salary as they may be deserved.

Provision should be made for continuing the campaign against the white pine blister rust upon an increased scale, in order to check the disease before it has gained such headway that this is impossible.

DIVISION OF WATERS

A law should be enacted putting into effect the recommendations of the Governor regarding development of the State's latent water power resources.

Article 22, section 3, of the Conservation Law should be amended, to give the Commission supervision over all structures which in any way impound the natural flow of the streams over which the Commission has jurisdiction under this section.

Respectfully submitted,
GEORGE D. PRATT,
Commissioner.

ALBANY, N. Y., *January* 15, 1918.

CONSERVATION BUREAU

OF

ATTORNEY-GENERAL'S OFFICE

REPORT OF CONSERVATION BUREAU ATTORNEY-GENERAL'S OFFICE

The Attorney-General, having charge and control of the legal business of the Conservation Commission, has turned over to the Commission the sum of $30,077.81 in penalties collected for violations of the conservation law during the year 1917. This is exclusive of judgments uncollected.

During the year 1917 various appeals have been taken to the Appellate Division and Court of Appeals. Among them was the action against Louis P. Clair, originally brought to recover penalties for selling partridges in violation of the conservation law. The trial court dismissed the complaint upon the ground that the facts shown did not constitute a sale within the meaning of the statute. The Appellate Division, Fourth Department, affirmed the judgment of the trial court. The Court of Appeals, however, reversed the judgment, thereby determining that serving protected game as part of a meal furnished by a hotel or restaurant to a guest, as part of board paid for by the day or week, constitutes a sale of game within the prohibition of sections 176 and 180 of the conservation law.

The Appellate Division, Third Department, rendered a decision in an action against the New York Central and Hudson River Railroad Company for setting fires to forest lands in the Adirondack Park and affirmed the judgment of the Supreme Court in favor of the People. The amount of the judgment in this action has been paid.

Several actions are pending in Clinton county involving title to lands in Lot 33, Township 3, Old Military Tract. One of these actions, entitled The People of the State of New York *v.* Heman E. Baker, was tried before Justice Henry V. Borst in the trial court and decided in favor of the state. The Appellate Division reversed the judgment and an appeal from the order of reversal is now pending in the Court of Appeals.

In 1914 a motion was made by defendants for an order that judgment against William Payne and Martha Payne be vacated and re-opened, upon the ground that the judgment was irregularly entered without making proper proofs. This judgment was recovered by the People in 1904 in an action in ejectment, the premises being located in Township 40, Hamilton county. Judge Van Kirk denied defendant's motion for such order and the Appellate Division, Third Department, has rendered a decision affirming same.

In the matter of the application of the Attorney-General for a writ of mandamus addressed to Jacob Taubenheimer as Supervisor of the town of Bellmont, for payment of moneys to the Conservation Commission, being the amount due from the town of Bellmont on account of expenditures made by the Commission for fighting forest fires, the motion was heard before Judge Henry T. Kellogg and order entered directing that a peremptory writ of mandamus issue out of and under the seal of the Court, directing said Taubenheimer, as supervisor, to pay to the Commission the amount due. Appeal was taken by said Taubenheimer to the Appellate Division, Third Department, and the order was unanimously affirmed.

In Oswego county an action was commenced by Orville H. Smith against Daniel Miller, the defendant being the foreman of the state fish hatchery located at Constantia, to recover damages for an alleged trespass. Judgment for the plaintiff was rendered by the trial court; appeal was taken to the Appellate Division, Fourth Department, and judgment was affirmed. Appeal is now pending in the Court of Appeals.

There is pending in the Appellate Division, Third Department, an action entitled The People *v.* Levi B. Dedrick. This is an appeal by defendant from a judgment in favor of plaintiff, adjudging that the defendant and every person claiming under him be barred from all claim, interest or easement in or lien upon certain premises located in Great Lot 2, Small Lot B or 2, in the 24th Allotment, Kayaderosseras Patent, town of Corinth, county of Saratoga. Several actions involving title to premises in Great Lot 2 are being held awaiting the result of the appeal in this action.

The Court of Appeals affirmed an order of the Appellate Division of the Supreme Court, Fourth Department, reversing the order of the county court of Chautauqua county and remanding the judgment debtor to the custody of the sheriff. This was a proceeding commenced by Harry Locke under the provisions of the debtor and creditor law in the county court to effect his release from the Chautauqua county jail, where he was imprisoned by virtue of an execution against his person, issued on a judgment recovered against him in Supreme Court in an action by the People to enforce a penalty prescribed for a violation of the Conservation Law.

In an action entitled The People of the State of New York ex rel Alfred Olsen v. The Sheriff of Erie County, the relator Olsen was confined in the county jail of Erie County under a body execution issued upon a judgment recovered in the Supreme Court in Erie County for a penalty upon the verdict of a jury in an action brought by the People to recover the penalty prescribed by the conservation law for unlawfully using a gill net in the waters of Lake Erie. The relator took no appeal from the judgment and after confinement in jail for some time, sought to test the jurisdiction of the court to render judgment by habeas corpus proceedings. Appeal to the Appellate Division was taken from an order directing the sheriff of Erie county to discharge said Alfred Olsen from his custody. The Appellate Division reversed the order appealed from and remanded the relator to the custody of the sheriff. The Court of Appeals has affirmed this order.

There is pending in the Court of Appeals an action entitled The People of the State of New York against Leroy T. Bradford. This is an appeal by the People from a judgment of the Appellate Division reversing the judgment of the Fulton County Trial Term. The action was to recover a penalty for violation of the Conservation Law in that the defendant failed to exhibit a hunting license. The defendant by his answer claimed immunity from all liability on the ground that in a John Doe proceeding theretofore had, he had testified as a witness for the People. The trial court held as a matter of law that his appearance and examination as a witness was fraudulent and collusive and directed a verdict for the plaintiff. Upon appeal to the Appellate Division, the judgment entered upon the verdict was reversed upon the ground that the trial court erred in refusing to dismiss the complaint on the ground that it did not state facts sufficient to constitute a cause of action.

In 1909 the State of New York, through the Forest Preserve Board, appropriated 11,187 acres of land in Herkimer county, which land was owned by the Taggarts Paper Company. A claim was filed for damages to claimant and its assignor, Robert J. Gaffney, in the sum of $475,880. A decision has been rendered by the Court of Claims awarding claimant the sum of $175,743.27 for the property actually taken and the sum of $14,800 for damages to the remainder of his property, resulting from said appropriation, amounting in all to the sum of $190,543.27. The trial of this action in the Court of Claims occupied several days and elaborate arguments of the law questions involved were made on both sides, and carefully prepared briefs filed. The case is of the utmost importance as others of a similar character and involving large sums of money are to follow.

In 1914 an action was commenced against the Chateaugay Ore & Iron Company and others to recover penalties for cutting trees on township 5, Old Military Tract, Clinton county. The question of title involved necessitated a survey of the entire township. The case was referred to Judge Irving G. Vann, Official Referee, and several hearings were held and a decision by the referee on the question of title was rendered holding that the People of the State of New York are entitled to all the land included in the description. The question of damages is to be determined upon proofs to be presented. The taking of proofs of the amount of damages was commenced December 6th, but has not been completed.

The claim of the Herkimer Lumber Company, involving $73,017 was finally submitted to the Court of Claims in January, 1917. This case is important on account of the law questions involved, it being claimed on behalf of the state that the claimant's alleged damages resulting from an injunction procured by a former Attorney-General, restraining lumbering operations of the claimant, should have been assessed in the Supreme Court, by the Judge who tried the equity action, or by a Referee appointed for that purpose, and that the Court of Claims had no jurisdiction to hear or determine the claim. This action remains undetermined in the Court of Claims.

Another action of great importance to the State is that of the Saratoga State Waters Corporation and others against George D. Pratt, individually and as Conservation Commissioner of the State of New York. On motion of defendant's counsel, the plaintiffs were required to elect whether to proceed against George D. Pratt individually or as conservation commissioner and they elected to proceed against him individually. This action was brought to recover damages for an alleged trespass by the defendant, based upon his refusal to let the plaintiffs into possession of certain property, being part of the state reservation at Saratoga Springs, which the plaintiffs claim under and by virtue of a contract entered into with them by the former commissioners of the State Reservation at Saratoga Springs, and which contract the defendant as Conservation Commissioner refused to carry out. This action was submitted to a trial court, Mr. Justice Borst presiding, in the month of March 1917, both by oral arguments and by the submission of briefs at a later date, but no decision has yet been reached.

Two actions were brought during the latter part of 1917 against George D. Pratt as Conservation Commissioner of the State of New York and Clifford R. Pettis as Superintendent of Lands and Forests, one by Arthur L. Byron-Curtis and the other by George E. C. Kenyon. These actions were to restrain the defendants from carrying into effect alleged threats to tear down and remove camps located on lands claimed by the defendants to be part of the Forest Preserve. The only question involved in these actions is the location of the line westerly of that claimed by the State in the town of Wilmurt, Herkimer county. Another action involving the same question was brought in the latter part of 1917 by the People against Charles T. Sperry to recover possession of land claimed by him and occupied as a camp site. This action and the two equity actions above mentioned, were tried together before Mr. Justice Crouch at a Special Term of the Supreme Court held in Utica on the 12th day of December 1917. On the trial of these actions the State's title to the land in question was fully introduced in evidence, and at the close of the hearing, Mr. Justice

Crouch announced that he would hold the matter open with leave to the adverse parties to make further proof, if possible, within a reasonable time, in an effort to establish another line than that claimed by the People. Counsel for the Commission are confident that no further effort will be made by adverse claimants and that the decisions will soon be rendered in favor of the State in all these actions.

From the orders received upon resolution of the commission to commence action, the following are pending: 77 actions involving title to lands in the forest preserve; 6 actions involving trespass on lands of the state; 2 actions involving violations of the top-lopping law; 1 action for fire violation, and 42 actions for violations of the fish and game provisions.

The following orders have been finally disposed of during the past year: 32 cases involving title; 12 cases involving trespass; 3 cases involving fire violations, and 88 cases involving fish and game violations.

Orders undisposed of are as follows: 73 orders involving title; 26 orders involving trespass; 8 orders involving fire violations, and 12 orders involving fish and game violations.

FINANCIAL STATEMENT

FINANCIAL STATEMENT

SUMMARY OF RECEIPTS AND DISBURSEMENTS, EXCLUSIVE OF REGULAR ACCOUNTS WITH THE STATE COMPTROLLER, FOR FISCAL YEAR ENDING JUNE 30, 1917

Receipts

(Exclusive of Receipts from Division of Saratoga Springs)

Fines and penalties	$70,614	35
Net licenses	19,907	23
Breeders' licenses	1,019	00
Hunting licenses	230,683	90
Tax and rentals — shellfish lands	31,860	74
Importation foreign game tags	5,209	30
Tagging trout	2,380	25
Importation and possession licenses	974	00
Cuba reservoir rentals	2,789	49
Trespass on State land — fines	2,642	86
Sale of trees	4,647	15
Fire rebates	3,283	76
Top lopping — fines	642	39
Telephone rentals	65	00
Fire fines	20,379	10
Domesticated game tags	30	00
Dog licenses — hunting	1,779	00
Magazine subscriptions	237	73
Sale of maps	113	00
Sale of badges	45	00
Sale of old buildings and materials	529	09
Damages from cutting roads in forest preserve	872	44
Refund on sale of land	513	71
Sale of fish	676	51
Sale of skins, confiscated	314	61
Refunds on salaries	87	05

Rebate on surveys	33 75
Miscellaneous	285 70
	$402,616 11

Disbursements

By Cash to State Treasurer	$402,059 47
By refunds and costs of collection	556 64
	$402,616 11

SUMMARY OF EXPENDITURES FOR FISCAL YEAR ENDING JUNE 30, 1917

(Exclusive of Division of Saratoga Springs and Canaseraga Creek Improvement Fund)

Administrative

Salaries, regular	$50,325 80	
Salaries, temporary	1,787 35	
Printing and advertising	7,928 31	
Office expenses	2,947 86	
Fuel, light, heat and power	74 31	
Equipment	3,603 39	
Supplies	4,790 08	
Traveling expenses	5,762 52	
Communication	7,929 73	
Repairs	207 12	
		$85,356 47

Division of Fish and Game

Fish culture			
Salaries, regular	$18,183 20		
Wages, temporary	41,297 55		
Maintenance and operation of hatcheries	43,917 82		
Dunkirk hatchery — Land	5,052 91		
		$108,451 48	
Marine fisheries bureau			
Salaries, regular	$9,300 00		
Maintenance, operation, surveying, etc	7,585 76		
		16,885 76	
Game farms			
Salaries, regular	$8,048 61		
Wages, temporary	1,923 96		
Maintenance and operation	22,461 17		
		32,433 74	
License bureau			
Salaries, regular	$7,200 00		
Tags and tagging machines	1,422 03		
Hunters' buttons	3,000 00		
Hunters' licenses and forms	4,305 40		
County clerks' fees	1,749 11		
		17,676 54	
Game protection			
Salaries, regular	$144,355 19		
Wages, temporary	7,899 40		
Protectors' expenses, traveling, etc.	75,281 69		
Moieties and expenses of prosecutions	7,958 88		
Printing	1,708 38		
Expenses, steamboats and launches	5,665 33		
Miscellaneous expenses	288 29		
		243,157 16	
			$418,604 68

The springs on the State Reservation at Saratoga are flowing with all their original vigor.

Power running to waste on the Genesee river

Equalization of floods and low water on the Genesee river will provide power equal to 2,000,000 tons of coal each year.

Division of Lands and Forests

Salaries, regular		$36,342 53	
Reforesting			
Wages, temporary	$29,808 00		
Expenses, travel, etc	10,667 70		
Printing	483 45		
		40,959 15	
Fire fighting			
Salaries, regular	$53,444 40		
Wages, temporary	4,921 15		
Expenses, traveling, etc	36,165 28		
Printing	483 46		
		95,014 29	
Surveying and protecting State's title			
Wages, temporary	$3,559 48		
Expenses of prosecution	5,756 67		
Refund, Rogers Co	500 00		
		9,816 15	
White pine blister rust disease			
Services and expenses of agents and employees, etc		3,320 55	
St. Lawrence reservation			
Maintenance and repairs		1,399 51	
Lake George and Cedar Point docks, shorings and improvements		138 34	
State forest preserve fund — expenses		1,640 54	
			$188,631 06

Division of Waters

Salaries, regular		$26,230 42	
Salaries, temporary, surveys		6,244 50	
Expenses, traveling, etc		5,858 04	
Bureau of docks and dams			
Salaries, regular	$3,500 00		
Wages, temporary	705 00		
Expenses, traveling, etc	2,099 57		
		6,304 57	
Hydrographic investigations			
Salaries, temporary	$6,447 51		
Expenses, traveling, supplies, etc.	5,023 00		
		11,470 51	
Investigating river structures, services and expenses		1,113 10	
Flood prevention services and expenses		87 00	
Drainage improvement services and expenses		1 126 95	
River regulation by storage reservoirs			
Services and expenses		1,458 38	
			59,893 47
Total expenditures, exclusive of Division of Saratoga Springs and Canaseraga Creek Improvement Funds			$752,485 68

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